APPENDIX 3.1.1-1

Air Quality/Greenhouse Gases Technical Report

APPENDIX 3.1.1

~~DRAFT~~FINAL

Air Quality and Greenhouse Gas Technical Report for the Jacumba Solar Energy Project

~~Major Use Permit XXXX-XX-XXX~~

~~Environmental Review Project Number~~ PDS2014-~~MPA~~MUP-14-~~015~~014

Jacumba, San Diego County, California

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ACRONYMS AND ABBREVIATIONS

APCD	Air Pollution Control District
AQMD	Air Quality Management District
BACT	Best Available Control Technology
CAA	federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CO	carbon monoxide
DPM	diesel particulate matter
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gas
HAP	hazardous air pollutant
$\mu g/m^3$	micrograms per cubic meter
MUP	major use permit
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NO_x/NO_2	nitrogen oxides/nitrogen dioxide
O_3	ozone
O&M	operations and maintenance
OEHHA	Office of Environmental Health Hazard Assessment
Pb	lead
PCS	plant control system
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to 10 microns
ppm	parts per million
RAQS	San Diego County’s Regional Air Quality Strategy
SANDAG	San Diego Association of Governments
SCADA	supervisory control and data acquisition
SCAQMD	South Coast Air Quality Management District
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SDG&E	San Diego Gas & Electric
SIP	State Implementation Plan
SO_x/SO_2	sulfur oxides/sulfur dioxide
TAC	toxic air contaminant
T-BACT	Toxics–Best Available Control Technology

VMT	vehicle miles traveled
VOCs	volatile organic compounds

EXECUTIVE SUMMARY

The Proposed Project would be located on a property that totals approximately 304 acres in southeastern San Diego County. The solar facility composing the Proposed Project would be within an approximately 108-acre fenced area and would use photovoltaic (PV) fixed tilt rack electric generation system technology to produce solar energy at the utility-scale. The Proposed Project could produce up to 20 megawatts (MW) of solar energy and would be located on approximately 108 acres within the Mountain Empire Subregional Plan area in unincorporated San Diego County.

The air quality and greenhouse gas (GHG) impact analysis evaluates the potential for significant adverse impacts to the air quality and GHGs due to construction and operational emissions resulting from the Proposed Project. Construction of the Proposed Project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials. The analysis concludes that the daily construction emissions would not exceed the County of San Diego's (County) significance thresholds for criteria pollutants. Air quality impacts resulting from construction would, therefore, be less than significant. Additionally, all operational emissions for criteria pollutants were found to be less than significant.

Regarding consistency with local plans and policies affecting air quality, the Proposed Project does not include residential development that would contribute to local population growth and associated vehicle miles traveled on local roadways. As the Proposed Project would not result in growth-inducing uses, Project development has been accounted for in the Regional Air Quality Strategy, and the Proposed Project would be consistent with local air quality plans. Impacts would be considered less than significant.

Impacts to sensitive receptors, including odor impacts, would be less than significant as the proposed solar development would not be associated with a land use that would generate objectionable odors, and construction would be considered short-term and temporary in nature. Cumulative impacts resulting from the Proposed Project in combination with other projects within the site vicinity would not be considered cumulatively considerable.

GHG emissions generated by the Proposed Project associated with construction equipment and vehicles, operations and maintenance vehicular traffic and water supply were estimated. The estimated operational GHG emissions would be ~~62~~ 258 metric tons carbon dioxide equivalent (CO_2E) per year. As such, Project emissions would not exceed the ~~2,500~~900-metric-ton screening threshold as indicated in the County of San Diego's ~~Guidelines for Determining Significance – Climate Change~~Interim Approach to Addressing Climate Change in CEQA

Documents, which includes a 2,500900 metric ton per year "bright line" screening threshold for amortized construction emissions and operational emissions (County of San Diego 20132010).

1 INTRODUCTION

1.1 Purpose of the Report

The purpose of this report is to estimate and evaluate the potential air quality and greenhouse gas (GHG) impacts associated with construction and operation of the Proposed Project. Air quality impacts are evaluated for their significance based on the criteria provided in the County's *Guidelines for Determining Significance – Air Quality* (County of San Diego 2007). GHG impacts are evaluated for their significance based on the County of San Diego's "Interim Approach to Addressing Climate Change in CEQA Documents" based on the California Air Pollution Control Officers Association (CAPCOA) guidance (County of San Diego 2010)~~County of San Diego's *Guidelines for Determining Significance – Climate Change* (County of San Diego 2013)~~.

1.2 Project Location and Description

The Proposed Project would be located on a property that totals approximately 304 acres in southeastern San Diego County (see Figure 1, Regional Location Map). The solar facility composing the Proposed Project would be within an approximately 108-acre fenced area (shown on Figure 2, Specific Location Map) and would use photovoltaic (PV) fixed tilt rack electric generation system technology to produce solar energy at the utility scale. The Proposed Project could produce up to 20 megawatts (MW) of solar energy and would be located on approximately 108 acres within the Mountain Empire Subregional Plan Area in unincorporated San Diego County (see Figure 2, Specific Location Map). Figure 3, Project Site Plan, and Figure 4, Project Environmental Setting, show the location of the Proposed Project in the context of local infrastructure and applicable plans, as well as the adjacent recently constructed East County Substation (ECO Substation).

The following provides an overview of the Proposed Project. Following this overview, Section 1.2.1, Project's Component Parts, describes Project components. Section 1.2.1 is broken down into two subsections: Section 1.2.1.1, Project Components and Activities, which describes the Proposed Project components, construction, operation, and decommissioning activities; and Section 1.2.1.2, Project Design Features, which describes features incorporated into the design to reduce or avoid the potential for environmental effects.

Jacumba Solar Energy Project

The Proposed Project would produce up to 20 MW of alternating current (AC) generating capacity and would consist of approximately 81,108 PV modules fitted on 2,253 fixed-tilt rack panels. The Proposed Project located on approximately 2.5 miles to the east of the community of Jacumba Hot Springs and immediately north of the U.S./Mexico international border.

In addition to the panels and direct current (DC) to AC conversion equipment (i.e., inverter and transformer units), the Proposed Project would include the following primary components:

- A 1,000-volt to 1,500-volt DC underground collection system and a 34.5-kilovolt (kV) underground AC collection system linking the inverters to the on-site Project substation.
- A 110-foot by 215-foot on-site private collector substation site encompassing a fenced pad area and a maximum height of 35 feet to surround approximately 15,000 square feet of equipment, including 600 square feet of metal-clad switch gear.
- A 138 kV overhead transmission line (gen-tie) would connect the Project substation to the ECO Substation.
- An approximately 10 MW battery energy storage system that would be located on approximately 14,400 square feet (120-foot by 120-foot pad) within the collector substation.

The Jacumba Solar substation and gen-tie interconnection facility would be sized to accommodate the full 20 MW AC solar plant and the proposed 10 MW energy storage system output. The Proposed Project would be located entirely on private lands within unincorporated San Diego County, including the gen-tie. Upon completion, Jacumba Solar would be monitored off site through a supervisory control and data acquisition (SCADA) system. See the Project's Component Parts section for further details.

Primary access to the Jacumba Solar site would be provided via an improved access road from Old Highway 80, as shown on Figure 3. Two additional points of emergency egress/ingress would be provided at the Project's southwestern point and northeastern point to facilitate U.S. Customs and Border Protection access and to provide an alternate fire access point, respectively.

Power from the on-site private substation would be delivered to the 138 kV bus at the adjacent San Diego Gas & Electric (SDG&E) ECO Substation via a less than 0.25-mile dual circuit 138 kV transmission line within a 125-foot private ROW if constructed aboveground and a 60-foot easement when underground. The Jacumba Solar gen-tie line would extend directly east form the on-site substation to the ECO Substation. A transition pole would be constructed at the interconnection point at the ECO Substation.

Project's Component Parts

Project Components and Activities

This section describes Project components, construction, operation, and decommissioning activities. The anticipated construction and operational water usage of the solar facility is also discussed in this section.

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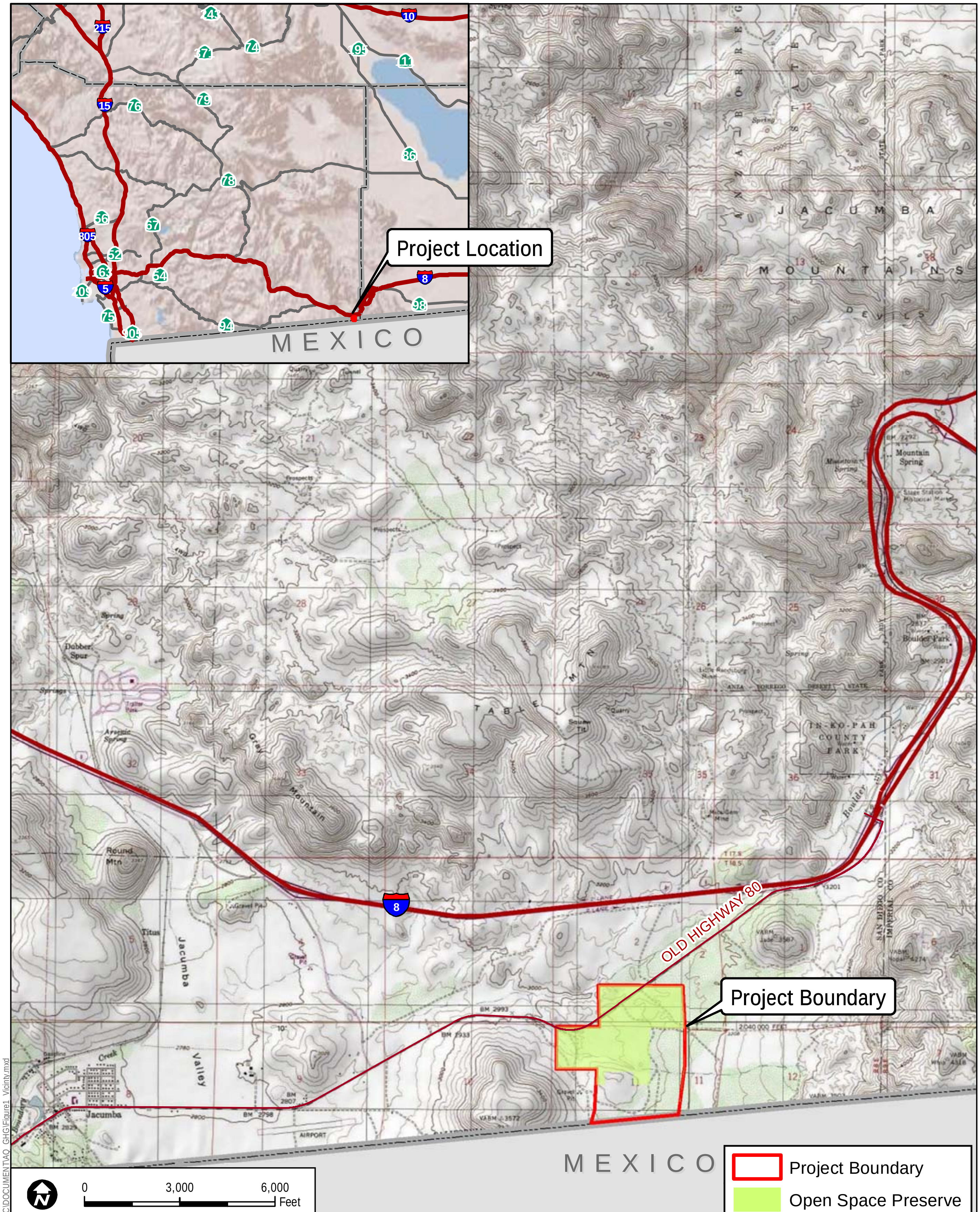

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SOURCE: Bing 2014

FIGURE 1

Regional Location Map

Jacumba Solar Air Quality and Greenhouse Gas Technical Report

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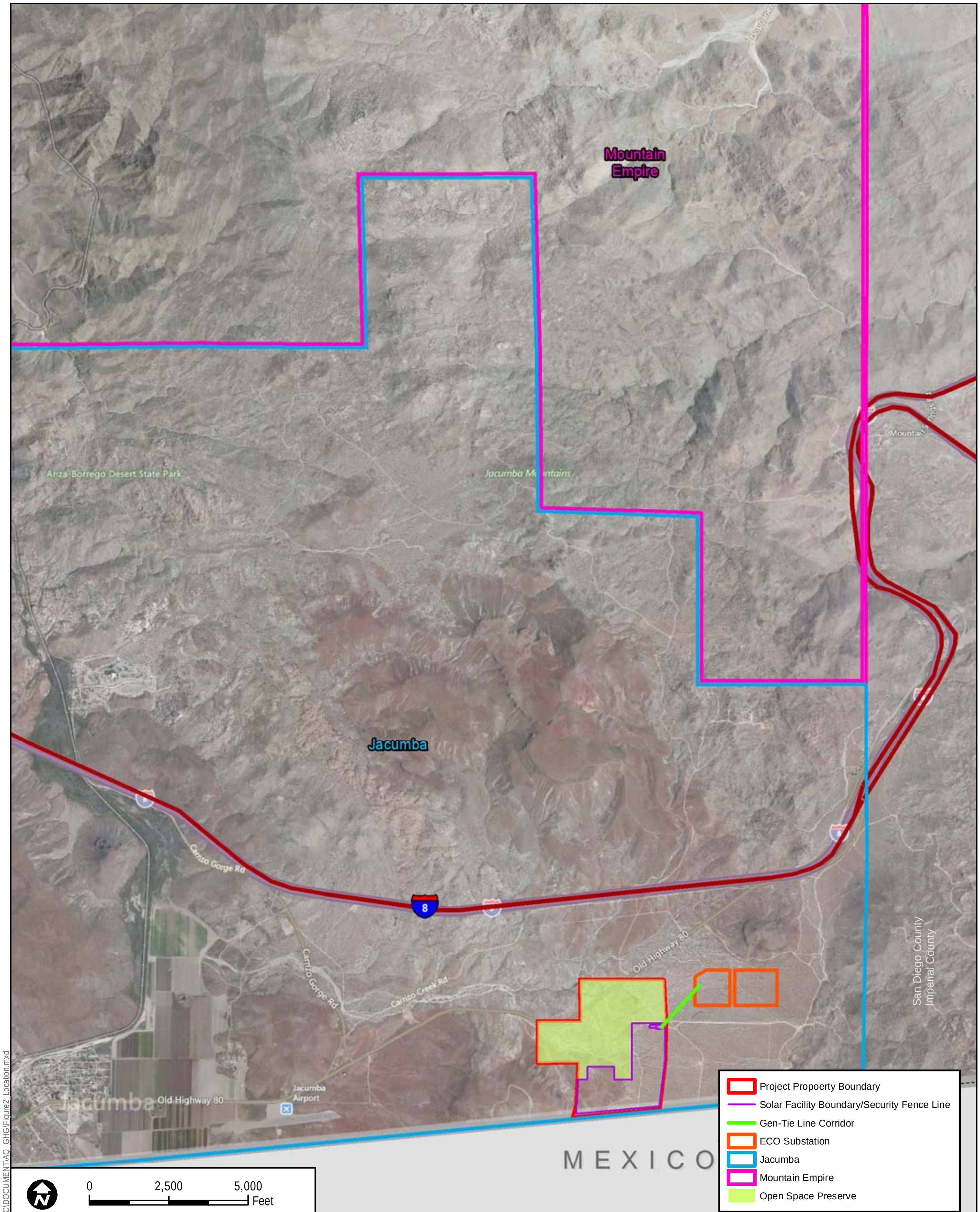

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FIGURE 2
Specific Location Map

Jacumba Solar Air Quality and Greenhouse Gas Technical Report

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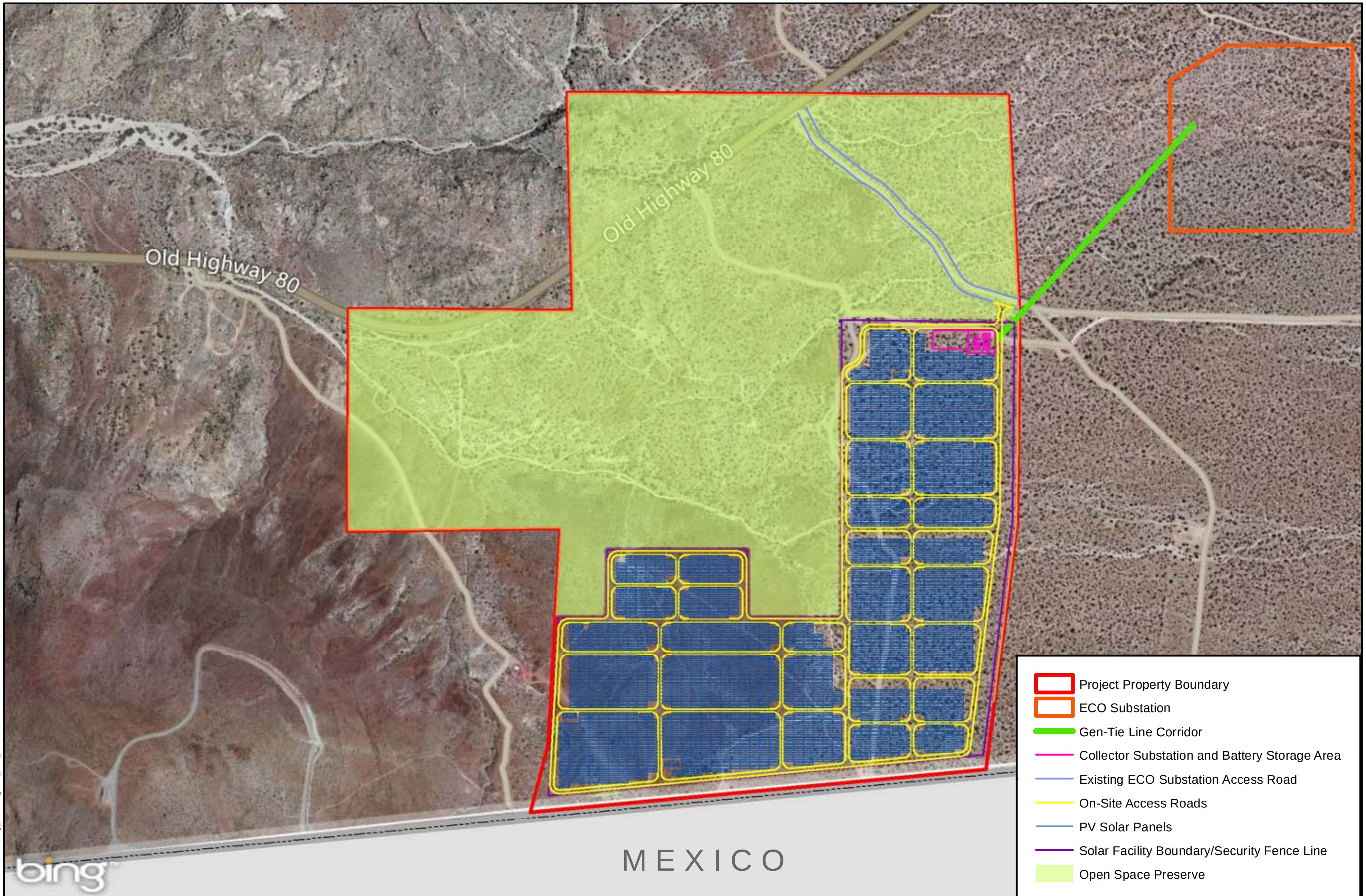

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FIGURE 3

Project Site Plan

Jacumba Solar Air Quality and Greenhouse Gas Technical Report

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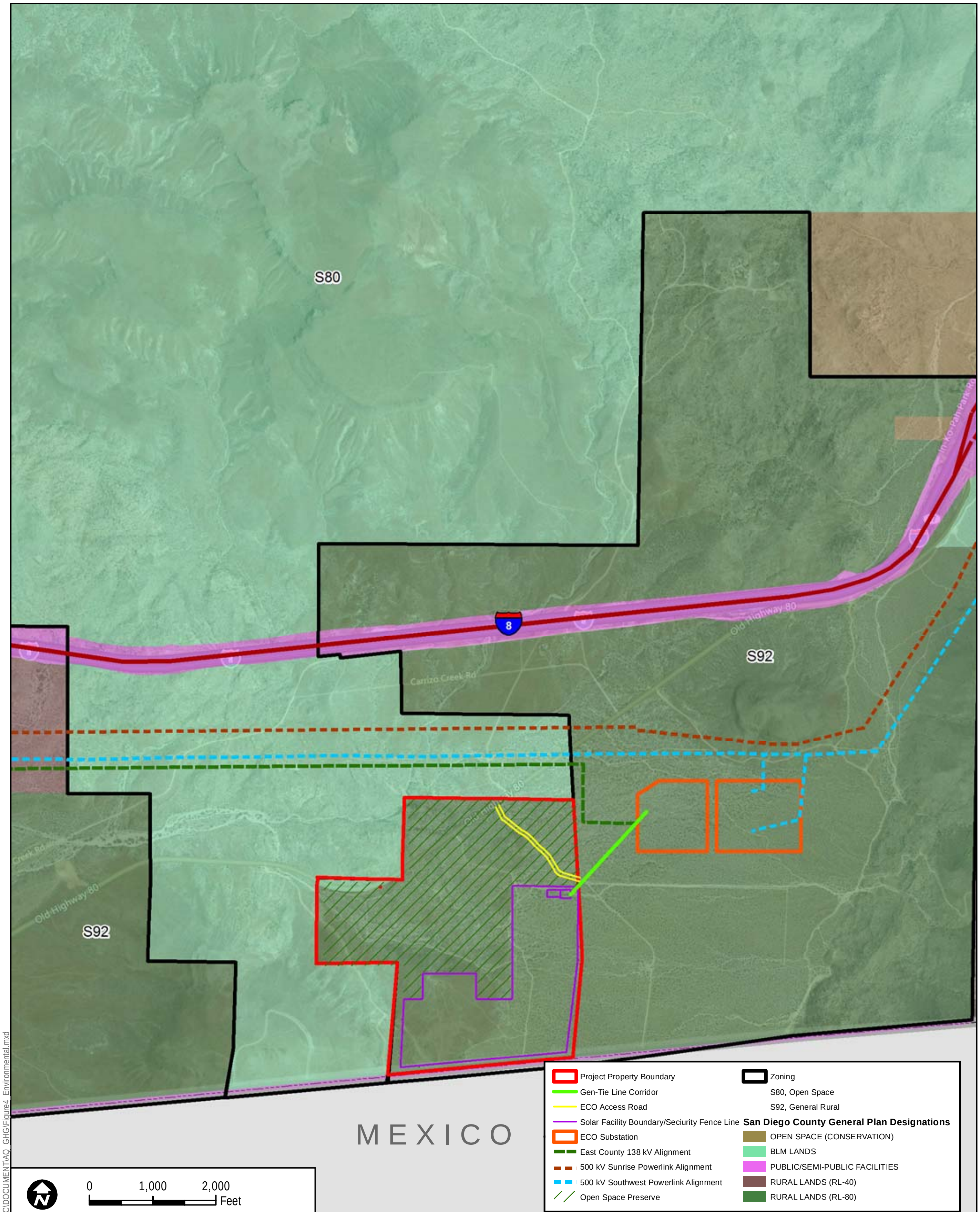

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SOURCE:Bing 2014

FIGURE 4

Project Environmental Setting

Jacumba Solar Air Quality and Greenhouse Gas Technical Report

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Module

The Project would include installation of individual fixed-tilt-mounted PV modules which would comprise the majority of the proposed facilities. PV modules generate electricity by safely converting the energy of the sun's photons into DC electrons. PV modules can be wired in series and/or parallel to obtain a required nominal voltage. The PV modules are interconnected and arranged to increase overall reliability.

The PV modules have been stringently tested and are robustly constructed to guarantee a useful life of 25 to 30 years in adverse weather conditions. The PV modules are uniformly dark in color, non-reflective, and designed to be highly absorptive of all light that strikes their glass surfaces. The PV modules deployed for use in the Project would comply with all industry standard quality testing. The PV modules would be electrically connected to the grounding system of the facility in accordance with local codes and regulations. The final PV module selection would be determined at the detailed engineering phase.

Support Structures

Racking refers to the support structure to which the solar PV modules are affixed that allows them to be properly positioned for maximum capture of the sun's solar energy. The PV module arrays (a row of PV modules) would be a fixed-tilt system that would be oriented along an east-west axis. The mounting structures are typically mounted on metal pipe pile or beam foundations four to six inches in diameter. The beams would be driven into the soil using a pile/vibratory/rotary driving technique similar to that used to install freeway guardrails. Driven pier foundations offer multiple benefits, including quick installation and minimal site disturbance, and are a "concrete-free" foundation solution that would allow for easy site reclamation at the end of the Project life cycle. Most foundations would be driven to approximate depths of 10 to 15 feet deep. The PV modules, at their highest point, would be approximately 8 feet above the ground surface.

Depending on final engineering, the arrays may be equal in length, creating a uniform rectangular Project footprint, or may vary in length in order to avoid sensitive resources. The east-west arranged fixed-tilt arrays, if used, would be constructed approximately 25 feet apart (centerline to centerline) in a north-south direction, with an east-west array spacing of approximately 12.5 feet. Each PV module array "row" would measure approximately 144 feet in total combined length and approximately 6.5 feet in width. The PV module arrays' final elevations from ground would be determined during detailed Project design; however, it is common to maintain as low of an elevation profile as possible to reduce potential wind loads on the PV module arrays.

Inverters, Transformers and Associated Equipment

PV modules would be electrically connected to adjacent modules to form module "strings" using wiring attached to the support structures. PV module strings would be electrically connected to each other via underground wiring. Wire depths would be in accordance with local, state, and federal codes. String wiring terminates at PV module array combiner boxes, which are lockable electrical boxes mounted on an array's support structure. Output wires from combiner boxes would be routed along an underground trench system approximately 3.5 feet deep and 1 foot wide, including trench and disturbed area, to the inverters and transformers.

Inverters are a key component of solar PV power-generating facilities because they convert the DC generated by the PV module array into AC that is compatible for use with the transmission network. The inverters within the electrical enclosures would convert the DC power to AC power and the medium-voltage transformers would step up the voltage to collection-level voltage (34.5 kV).

The inverters, medium-voltage transformers, and other electrical equipment are proposed to be located on skids located throughout the Project site. These power conversion stations would be either shop fabricated as one unit, or field assembled on site. The inverter and medium-voltage transformer units would be mounted on concrete foundation pads or concrete piers depending on local soil conditions. All electrical equipment would be either outdoor rated or mounted within enclosures designed specifically for outdoor installation. The proposed equipment poses no electrical shock risk and is safe to touch.

Energy Storage System

A battery energy storage system is proposed to be located inside the on-site substation in the northeast section of the Proposed Project. It would consist of ten enclosures equipped with batteries capable of delivering approximately 10 MW AC of energy. Each enclosure would include an air conditioning unit for cooling purposes and a self-extinguishing fire system. Critical information from the system would be monitored along with the solar plant performance. A master control system would coordinate operation of the solar generation equipment and the energy storage system.

Connector Line, Fiber Optic Line, and Point of Interconnection

The Project would interconnect to the ECO Substation project, which is owned and operated by SDG&E. A 138 kV line interconnecting from the ECO Substation project to the Proposed Project would be constructed above grade.

The 138 kV interconnection line would consist of two or three overhead steel poles that would be up to 150 feet in height. The vertical distance between the cross-arms on the steel case riser would be 20 feet. The distance between the ground and the lowest conductor would be at least 30 feet and the distance between conductors would be 18 feet horizontally and 12 feet vertically. Although span lengths between poles would be dependent on terrain, lengths would generally be between 400 and 800 feet. Components used to construct the proposed 138 kV transmission line would all feature non-reflective surfaces. For instance, the insulators would be constructed of gray polymer, the conductors would be made from aluminum-wrapped steel, and the transmission poles and associated hardware would be composed of galvanized steel.

Control System

Operation of the solar facility would require monitoring through a SCADA system. The SCADA system would be used to provide critical operating information (e.g., power production, equipment status and alarms, and meteorological information) to the power purchaser, Project owners and investors, grid operator, and Project operations teams, as well as to facilitate production forecasting and other reporting requirements for Project stakeholders. The Project would also have a local overall plant control system (PCS) that provides monitoring of the solar field as well as control of the balance of facility systems. The microprocessor-based PCS would provide control, monitoring, alarm, and data storage functions for plant systems as well as communication with the Project's SCADA system. Redundant capability would be provided for critical PCS components so that no single component failure would cause a plant outage. All field instruments and controls would be hard-wired to local electrical panels. Local panels would be hard-wired to the plant PCS. Wireless technology would be considered as a potential alternative during final Project design. The SCADA system would be monitored remotely and no on-site operations and maintenance facilities or personnel would be necessary.

Project Construction, Operation, and Decommissioning Activities

Construction Activities and Methods

The construction of the solar facility would consist of several phases, including site preparation (described below), development of staging areas and site access roads, solar array assembly and installation, and construction of electrical transmission facilities.

Site Preparation and Grading

Clearing and Grading. Construction of the Proposed Project would involve clearing and grubbing of the existing vegetation; grading necessary for the construction of access and service roads and the installation of solar arrays; trenching for the electrical DC and AC collection system including the telecommunication lines; installation of the inverter stations; construction of underground 34.5 kV collection systems leading to the Project substation; and construction of the Project substation, energy storage facility, and the gen-tie line from the Project substation to the adjacent ECO Substation. Major Grading Permits would be required, and would be obtained once grading quantities are finalized. ~~There would be approximately 6,300 cubic yards of material imported soils to the Proposed Project site.~~

Collection System Trenching. Trenching requirements for the DC and AC electrical collection system and telecommunication lines would consist of a trench up to approximately 3 to 4 feet deep and 1 to 2 feet wide. The trenches may be filled with sand or another inert material to provide insulation and heat dissipation for the direct buried cable within the collection system. The topsoil from trench excavation would be set aside before the trench is backfilled and would ultimately comprise the uppermost layer of the trench. Excessive material from the foundation and trench excavations would be used for site leveling.

PV System Construction Overview. Project construction would include several phases occurring simultaneously with the construction of: (1) PV systems assembly consisting of pile driving of support racks and the placement of panels on support racks, (2) trenching and installation of the DC and AC collection system; (3) point of interconnection upgrades; and (4) the grading of access roads.

Soil Stabilization. In order to reduce fugitive dust and erosion, the disturbed areas on each site would either be treated in one of the following methods, or a combination of both: Treatment with a permeable nontoxic soil binding agent (preferred method), and/or placement of disintegrated granite or other base material.

Construction Personnel, Traffic, and Equipment. The number of workers expected on the site during construction would vary over the construction period and is expected to average up to approximately 120 each day, generating about 120 daily round trips. With a maximum of 140 a day during the most intense phase of construction, this is the approximately 6 weeks of mass grading. Deliveries of equipment and supplies to the site would also vary over the construction period but are expected to average about 5 to 7 daily trips. Maximum water deliveries would be approximately 55 daily round trips, during the mass grading phase. Equipment delivery trucks and water delivery trucks generate more than 1 passenger car equivalent trips. However, the most intense construction period requiring the water trucks would not coincide or overlap with the most workers on site. The mass grading activities result in the need for the most intense water use and the 55 truck deliveries a day. During this period approximately 20 workers would be required on site; the deliveries of dirt would be needed during this time in requiring the use of two haul trucks. During the mass grading phase approximately 221 average daily trips would be generated (111 round trips). The maximum number of workers would occur during the racks and panels installation, when water deliveries would be considerably reduced, requiring approximately 10 water truck deliveries a day, equipment deliveries would be on going through this phase. The trips generated during this phase would be approximately 298 average daily trips (149 round trips).

It is assumed that all employees would arrive within the morning peak hour and depart within the evening peak hour, and water and delivery truck trips would be distributed evenly throughout a 12-hour-shift day, between the hours of 7:00 a.m. and 7:00 p.m. Since the surrounding area is rural, traffic is very low on the local roads surrounding the Project site(s). Implementation of the Proposed Project would result in a temporary increase in traffic along these roads, but not to the level of the road carrying capacity. No road closures are anticipated during Project construction. A Traffic Control Plan to ensure safe and efficient traffic flow in the area and on the Project site would be prepared prior to construction. The Traffic Control Plan would be prepared in consultation with the County of San Diego and would contain Project-specific measures for noticing, signage, policy guidelines, and the limitation of lane closures to off-peak hours (although it is noted that no requirement for lane closures has been identified).

During the peak of construction, a typical day would include the transportation of parts, movement of heavy equipment, and transportation of materials.

Operational Activities and Methods

The Project would be an unmanned facility that would be monitored remotely. Appropriate levels of security lighting would be installed at the Project entrance. The site would be secured 24 hours per day by remote security services with motion-detection cameras.

Underground Collection System. The underground portion of the cable systems would be inspected and repaired if and when problems occur.

Generation Tie-line. The 138 kV interconnecting transmission line to ECO Substation would be inspected periodically for damage and repairs made as needed.

Electrical Substation and Energy Storage Facility. During operation, O&M staff would visit the Project substation and energy storage facility periodically for switching and other operation activities. Maintenance trucks would be utilized to perform routine maintenance, including but not limited to equipment testing, monitoring, repair, routine procedures to ensure service continuity and standard preventive maintenance.

Solar Field. The solar panels, racking systems, inverters, transformers, and other electrical components would be inspected periodically. Electrical components would be tested routinely according to manufacturer's recommendations. In the event that remote monitoring indicates a problem, such as low performance, in a section of the solar field a crew would investigate and correct the problem on an as needed basis. Approximately twice a year, if needed, the solar panels would be washed using a water truck and purified water. In addition, the on-site meteorological stations would be cleaned and adjusted on a regular basis.

Decommissioning Activities and Methods

The Jacumba Solar facility would operate, at a minimum, for the life of its long-term Power Purchasing Agreement. The initial term of the Power Purchasing Agreement for the solar facilities is for 20 years, with additional terms anticipated. The lifespan of the solar facility is estimated to be 30 to 40 years or longer. Due to the establishment of the Project infrastructure (both physical and contractual), the continued operation of Jacumba Solar beyond the initial Power Purchasing Agreement term is very likely. At the end of the useful life, two alternative scenarios are possible: (1) retool the technology and contract to sell energy to a customer or (2) if no other buyer of the energy emerges, the solar plant can be decommissioned and dismantled.

Decommissioning and Recycling

Decommissioning would first involve removing the panels for sale into a secondary solar PV panel market or recycling. The majority of the components of the solar installation are made of materials that can be readily recycled because the panels' components can be broken down. If the panels can no longer be used in a solar array, the aluminum can be resold, and the glass can be recycled. Other components of the solar installation, such as the rack structures and mechanical assemblies, can be recycled as they are made from galvanized steel. Equipment such as inverters, transformers, and switchgear can be either reused or their components recycled. The equipment pads are made from concrete which can be crushed and recycled. Underground conduit and wire can be removed by uncovering trenches and backfilling when done. The electrical wiring is made from copper and/or aluminum and can be reused or recycled as well.

Dismantling

Dismantling the solar facility would entail disassembly of the solar facilities and substantive restoration of the site. Impacts associated with closure and decommissioning of the Project site would be temporary and would involve the following steps to dismantle the Project site and return it to a conforming use:

1. The aboveground (detachable) equipment and structures would be disassembled and removed from the site. Detachable elements include all panels, inverters, transformers, and associated controllers and transformers. Removal of the aboveground conductors on the transmission line would also be implemented. Most of these materials can be recycled or reclaimed. Remaining materials would be limited and would be contained and disposed of off

site, consistent with the County of San Diego Construction Demolition and Debris Management Plan (County Ordinance 68.508-68.518).

2. Underground collector and transmission components would be removed and recycled.
3. The use of the land would have to return to a use that is consistent with the County of San Diego Zoning Ordinance at the time of dismantling. The current zoning for the site is General Rural (S92), which allows for the following use types that are permitted pursuant to Section 2922 and 2923 of the County Zoning Ordinance: Residential, Family Residential, Essential Services, Fire and Law Enforcement Services, Agricultural Uses, Animal Sales and Services, Recycling Collection Facility, and Green Recycling.
4. If a new use is not proposed, the decommissioning would include removal of all ground-level components and preparing the site with a soil stabilization agent, such as a nontoxic permeable soil binding agent, or reseeded with native species. These activities would be consistent with current zoning General Rural (S92) or future applicable zoning.

Water Usage

The following discussion includes an estimate of the amount of water that would be needed for the Proposed Project during the construction and site preparation, ongoing panel washing, and the decommissioning and dismantling. The solar facility would use water from water sources that have been identified at this time include that include the following: Jacumba Service District (Brackish Water Not Distributed by District), Pine Valley Mutual Water Company, and Padre Dam Municipal Water District (Reclaimed Water Not Distributed by District).

Construction and Application of Soil Binding Agents

During construction, water would be used to suppress fugitive dust during grubbing, clearing, grading, trenching, and soil compaction and to apply a nontoxic soil binding agent to help with soil stabilization during construction. Water would also be used to mix concrete to be used for the substation, gen-tie in, and energy storage facility foundations. Total estimated water demand for Jacumba Solar facility (by activity) is listed in Table 1.

Table 1
Construction Water Demand

Activity	Total Estimated Water Demand	Total Estimated Water Demand (acre-feet)[1]
Site Preparation (clearing, grubbing, grinding, and dust control)~~Mass grading~~	0.4 AF/day for 28 days~~0.99 acre-feet/day for 28 days~~	11.3~~28~~
Grading ~~Concrete hydration~~	0.96 AF/day for 40 days~~40 gallons/cubic yard~~	38.4~~0.2~~
Dust Abatement [2]~~Dust abatement~~	About 25,000 gallons/day for 104 days [~~18,000 gallons/day for 234 days + 54,000 gallons/day~~	8.0~~15.4~~

Table 1
Construction Water Demand

Activity	Total Estimated Water Demand	Total Estimated Water Demand (acre-feet)[1]
	for 15 days] Average 20,200 gallons/day for 249 total construction days	
Other Construction Needs	Water necessary for other construction needs such as filling tanks for fire protection; washing stations for vehicles/equipment (noxious weed mitigation); the 1,500 foot offsite gen-tie line; and concrete hydration requirements for substation, inverter, and other facility foundations (e.g. fencing, lighting, etc...).	0.9
	Total Construction Water	**58.6**

Note:
1 1 One (1) acre-foot equals 325,851 gallons.
12 Dust abatement is included in the estimate for initial site preparation (first 40 days); therefore, general dust abatement was assumed to occur over 104 days (i.e., the remainder of the construction phase).

Operation and Maintenance Potable Usage

Water would be used for washing the solar modules and for reapplication of the nontoxic permeable soils stabilizers as follows.

Soil Binding Agent Application. It is anticipated that the soil stabilizer chosen for the Proposed Project would need to be reapplied annually. The Proposed Project would utilize a soil binding stabilization agent that is nontoxic and permeable. The purpose of the soil stabilizer is to prevent erosion and to reduce fugitive dust. To reapply the soil stabilizer agent would require approximately 3,300 gallons of water per acre.

Solar Module Washing. It is anticipated that in-place PV panel washing would occur every 2 months during evening or nighttime hours, between sunset and sunrise. Washing of the panels would be undertaken using wash trucks. Table 2 summarizes the operational water usage for Jacumba Solar.

Table 2
Operation Water Demand

Activity	Total Estimated Water Demand (gallons/year)
Application of soil binder (if required)[1]	280,000
Panel washing	800,000
Total Water Use/Year	**1,145080,000**

Note:
1. Based on application of nontoxic permeable soil binding agent 3,300 gallons per acre annually.

2 EXISTING CONDITIONS

2.1 Existing Setting

San Diego Region

The weather of the San Diego region, as in most of Southern California, is influenced by the Pacific Ocean and its semi-permanent high-pressure systems that result in dry, warm summers and mild, occasionally wet winters. The average temperature ranges (in degrees Fahrenheit (°F)) from the mid-40s to the high 90s. Most of the region's precipitation falls from November to April with infrequent (approximately 10%) precipitation during the summer. The average seasonal precipitation along the coast is approximately 10 inches; the amount increases with elevation as moist air is lifted over the mountains to the east.

The topography in the San Diego region varies greatly, from beaches on the west to mountains and desert on the east. Along with local meteorology, the topography influences the dispersal and movement of pollutants in the basin. The mountains to the east prohibit dispersal of pollutants in that direction and help trap them in inversion layers.

The interaction of ocean, land, and the Pacific High Pressure Zone maintains clear skies for much of the year and influences the direction of prevailing winds (westerly to northwesterly). Local terrain is often the dominant factor inland, and winds in inland mountainous areas tend to blow through the valleys during the day and down the hills and valleys at night.

Project Site

The Proposed Project encompasses a total of approximately 304 acres within the Mountain Empire Subregional Plan Area in unincorporated San Diego County. The 290-acre solar facility site is located south of Interstate 8 within private lands located adjacent to the U.S./Mexico border in eastern San Diego County. As depicted in Figure 3, Jacumba is situated south of Old Highway 80 and immediately north of the U.S./Mexico border. The approximately quarter-mile, dual circuit 138 kV gen-tie line would travel from the Jacumba Solar site to the SDG&E ECO Substation.

2.2 Climate and Meteorology

The Project site is located within the San Diego Air Basin (SDAB or basin) and is subject to the San Diego Air Pollution Control District (SDAPCD) guidelines and regulations. The SDAB is one of 15 air basins that geographically divide the State of California. The SDAB is currently classified as a federal nonattainment area for ozone (O_3) and a state nonattainment area for particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), and O_3.

The SDAB lies in the southwest corner of California and comprises the entire San Diego region, covering 4,260 square miles, and is an area of high air pollution potential. The basin experiences warm summers, mild winters, infrequent rainfalls, light winds, and moderate humidity. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds.

The SDAB experiences frequent temperature inversions. Subsidence inversions occur during the warmer months as descending air associated with the Pacific High Pressure Zone meets cool marine air. The boundary between the two layers of air creates a temperature inversion that traps pollutants. Another type of inversion, a radiation inversion, develops on winter nights when air near the ground cools by heat radiation and air aloft remains warm. The shallow inversion layer formed between these two air masses also can trap pollutants. As the pollutants become more concentrated in the atmosphere, photochemical reactions occur that produce O_3, commonly known as smog.

Light daytime winds, predominately from the west, further aggravate the condition by driving air pollutants inland, toward the mountains. During the fall and winter, air quality problems are created due to carbon monoxide (CO) and oxides of nitrogen (NO_x) emissions. CO concentrations are generally higher in the morning and late evening. In the morning, CO levels are elevated due to cold temperatures and the large number of motor vehicles traveling. Higher CO levels during the late evenings are a result of stagnant atmospheric conditions trapping CO in the area. Since CO is produced almost entirely from automobiles, the highest CO concentrations in the basin are associated with heavy traffic. Nitrogen dioxide (NO_2) levels are also generally higher during fall and winter days.

Under certain conditions, atmospheric oscillation results in the offshore transport of air from the Los Angeles region to San Diego County. This often produces high O_3 concentrations, as measured at air pollutant monitoring stations within the County. The transport of air pollutants from Los Angeles to San Diego has also occurred within the stable layer of the elevated subsidence inversion, where high levels of O_3 are transported.

Site-Specific Meteorological Conditions

The local climate in southeastern San Diego County, which is primarily desert, consists of dry, hot summers (temperatures reaching 120°F) and milder winters (daytime temperature in the 80s). The average summertime high temperature in the Project vicinity is approximately 94°F, although record highs have approached 111°F in July. The average wintertime low temperature is approximately 33°F, although record lows have approached 10°F in January. Average precipitation in the local area is approximately 15 inches per year, with the bulk of precipitation falling during January and February (WRCC 2014).

2.3 Regulatory Setting

2.3.1 Federal

The federal Clean Air Act (CAA), passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The U.S. Environmental Protection Agency (EPA) is responsible for implementing most aspects of the CAA, including the setting of National Ambient Air Quality Standards (NAAQS) for major air pollutants, hazardous air pollutant standards, approval of state attainment plans, motor vehicle emission standards, stationary source emission standards and permits, acid rain control measures, stratospheric ozone (O_3) protection, and enforcement provisions.

NAAQS are established by the EPA for "criteria pollutants" under the CAA, which are O_3, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$), and lead (Pb).

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The Clean Air Act requires the EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a State Implementation Plan (SIP) that demonstrates how those areas will attain the standards within mandated time frames.

2.3.2 State

California Clean Air Act

The California Clean Air Act was adopted in 1988 and establishes the State's air quality goals, planning mechanisms, regulatory strategies, and standards of progress.

Under the federal Clean Air Act, the task of air quality management and regulation has been legislatively granted to California Air Resources Board (CARB), with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB is responsible for ensuring implementation of the California Clean Air Act, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products. Pursuant to the authority granted to it, CARB has established California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS.

The NAAQS and CAAQS are presented in Table 3, Ambient Air Quality Standards.

Table 3
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]	National Standards[2]	
		Concentration[3]	*Primary[3,4]*	*Secondary[3,5]*
O_3	1-hour	0.09 ppm (180 μg/m³)	—	Same as Primary Standard
	8-hour	0.070 ppm (137 μg/m³)	0.075 ppm (147 μg/m³)	
CO	1-hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	—
	8-hour	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
NO_2[6]	1-hour	0.18 ppm (339 μg/m³)	0.100 ppm (188 μg/m³)	Same as Primary Standard
	Annual Arithmetic Mean	0.030 ppm (57 μg/m³)	0.053 ppm (100 μg/m³)	
SO_2[7]	1-hour	0.25 ppm (655 μg/m³)	0.75 ppm (196 μg/m³)	—
	3-hour	—	—	0.5 ppm (1300 μg/m³)
	24-hour	0.04 ppm (105 μg/m³)	0.14 ppm (for certain areas)[7]	
	Annual Arithmetic Mean	—	0.030 ppm (for certain areas)[7]	—
PM_{10}[8]	24-hour	50 μg/m³	150 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	20 μg/m³	—	
$PM_{2.5}$[8]	24-hour	—	35 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	12 μg/m³	12.0 μg/m³	15.0 μg/m³
Lead[9,10]	30-day Average	1.5 μg/m³	—	—
	Calendar Quarter	—	1.5 μg/m³ (for certain areas)[10]	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 μg/m³	
Hydrogen sulfide	1-hour	0.03 ppm (42 μg/m³)	—	—
Vinyl chloride[9]	24-hour	0.01 ppm (26 μg/m³)	—	—
Sulfates	24-hour	25 μg/m3	—	—
Visibility reducing particles[11]	8-hour (10:00 a.m. to 6:00 p.m. PST)	See footnote 11	—	—

Source: CARB 2013a

Notes: ppm= parts per million by volume; μg/m³ = micrograms per cubic meter; mg/m³= milligrams per cubic meter.

1 California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in a year,

averaged over 3 years, is equal to or less than the standard. For NO_2 and SO_2, the standard is attained when the 3-year average of the 98th and 99th percentile, respectively, of the daily maximum 1-hour average at each monitor within an area does not exceed the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr.
Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

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

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

6 To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

7 On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

8 On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 μg/m^3 to 12 μg/m^3. The existing national 24-hour PM 2.5 standards (primary and secondary) were retained at 35 μg/m^3, as was the annual secondary standard of 15 μg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 μg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

9 CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

10 The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 μg/m^3 as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

11 In 1989, CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Toxic Air Contaminants

California regulates toxic air contaminants (TACs) primarily through the Tanner Air Toxics Act (Assembly Bill (AB) 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified over 21 TACs and has adopted the EPA's list of hazardous air pollutants as TACs. Once a TAC is identified, CARB then adopts an airborne toxics control measure for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate best available control technology for toxics to minimize emissions. None of the TACs identified by CARB have a safe threshold.

Under the Air Toxics "Hot Spots" Act existing facilities that emit air pollutants above specified level were required to (1) prepare a TAC emission inventory plan and report, (2) prepare a risk assessment if TAC emissions were significant, (3) notify the public of significant risk levels, and (4) if health impacts were above specified levels, prepare and implement risk reduction measures.

The state has formally identified more than 200 substances as TACs, including the federal HAPs, and adopts appropriate control measures for sources of these TACs. As examples, TACs include acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and DPM. Some of the TACs are groups of compounds that contain many individual substances (for example, copper compounds and polycyclic organic matter).

California Health and Safety Code Section 41700

This section of the Health and Safety Code states that a person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health, or safety of any of those persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property. This section also applies to sources of objectionable odors.

2.3.3 Local

San Diego Air Pollution Control District

While CARB is responsible for the regulation of mobile emission sources within the state, local air quality management districts and air pollution control districts are responsible for enforcing standards and regulating stationary sources. The Project site is located within the SDAB and is subject to the guidelines and regulations of the SDAPCD.

In San Diego County, O_3 and particulate matter are the pollutants of main concern, since exceedances of state ambient air quality standards for those pollutants are experienced here in most years. For this reason, the SDAB has been designated as a nonattainment area for the state PM_{10}, $PM_{2.5}$, and O_3 standards. The SDAB is also a federal O_3 attainment (maintenance) area for 1997 8-hour O_3 standard, an O_3 nonattainment area for the 2008 8-hour O_3 standard, and a CO maintenance area (western and central part of the SDAB only). The Project area is in the CO maintenance area.

The SDAPCD and the San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The County *Regional Air Quality Strategy* (RAQS) was initially adopted in 1991, and is updated on a triennial basis, most recently in 2009 (SDAPCD 2009a). The RAQS outlines SDAPCD's plans and control measures designed to attain the state air quality standards for O_3. The RAQS relies on information from CARB and SANDAG, including mobile and area source emissions, and information regarding projected growth in the cities and San Diego County, to project future emissions and determine the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by the cities and San Diego County as part of the development of their general plans.

The *Eight-Hour Ozone Attainment Plan for San Diego County* indicates that local controls and state programs would allow the region to reach attainment of the federal 1997 8-hour O_3 standard by 2009 (SDAPCD 2007). In this plan, SDAPCD relies on the RAQS to demonstrate how the region will comply with the federal O_3 standard. The RAQS details how the region will manage and reduce O_3 precursors (oxides of nitrogen (NO_x) and volatile organic compounds (VOCs)) by identifying measures and regulations intended to reduce these contaminants. The control measures identified in the RAQS generally focus on stationary sources; however, the emissions inventories and projections in the RAQS address all potential sources, including those under the authority of CARB and the EPA. Incentive programs for reduction of emissions from heavy-duty diesel vehicles, off-road equipment, and school buses are also established in the RAQS. In the *Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard for San Diego County*, the SDAB did not reach attainment of the federal 1997 standard until 2011 (SDAPCD 2012). This plan, however, demonstrates the region's attainment of the 1997 O_3 NAAQS and outlines the plan for maintaining attainment status.

In December 2005, SDAPCD prepared a report titled *Measures to Reduce Particulate Matter in San Diego County* to address implementation of Senate Bill (SB) 656 in San Diego County (SB 656 required additional controls to reduce ambient concentrations of PM_{10} and $PM_{2.5}$) (SDAPCD 2005). In the report, SDAPCD evaluated the implementation of source-control measures that would reduce particulate matter emissions associated with residential wood combustion; various construction activities including earthmoving, demolition, and grading; bulk material storage and handling; carryout and trackout removal and cleanup methods; inactive disturbed land; disturbed open areas; unpaved parking lots/staging areas; unpaved roads; and windblown dust.

As stated above, the SDAPCD is responsible for planning, implementing, and enforcing federal and state ambient standards in the SDAB. The following rules and regulations apply to all sources in the jurisdiction of SDAPCD:

1. **SDAPCD Regulation IV: Prohibitions; Rule 51: Nuisance.** Prohibits the discharge, from any source, of such quantities of air contaminants or other materials that cause or

have a tendency to cause injury, detriment, nuisance, annoyance to people and/or the public, or damage to any business or property (SDAPCD 1969).

2. **SDAPCD Regulation IV: Prohibitions; Rule 55: Fugitive Dust.** Regulates fugitive dust emissions from any commercial construction or demolition activity capable of generating fugitive dust emissions, including active operations, open storage piles, and inactive disturbed areas, as well as track-out and carry-out onto paved roads beyond a project site (SDAPCD 2009b).

San Diego County

During construction of the Project, the construction contractor would be required to comply with County Code Section 87.428 and implement appropriate dust control measures.

County Code Section 87.428, Dust Control Measures. As part of the San Diego County Grading, Clearing, and Watercourses Ordinance, County Code Section 87.428 requires all clearing and grading to be carried out with dust control measures adequate to prevent creation of a nuisance to persons or public or private property. Clearing, grading, or improvement plans shall require that measures such as the following be undertaken to achieve this result: watering, application of surfactants, shrouding, control of vehicle speeds, paving of access areas, or other operational or technological measures to reduce dispersion of dust. These project design measures are to be incorporated into all earth-disturbing activities to minimize the amount of particulate matter emissions from construction (County of San Diego 2004).

2.4 Background Air Quality

2.4.1 Pollutants and Effects

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, 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: O_3, NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$, and lead. These pollutants are discussed below.[1] In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

[1] The following descriptions of health effects for each of the criteria air pollutants associated with project construction and operations are based on the EPA's Six Common Air Pollutants (EPA 2010) and the CARB Glossary of Air Pollutant Terms (CARB 2013b) published information.

Ozone. O_3 is a colorless gas that is formed in the atmosphere when VOCs, sometimes referred to as reactive organic gases, and NO_x react in the presence of ultraviolet sunlight. 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 VOCs and NO_x, the precursors of O_3, are automobile exhaust and industrial sources. Meteorology and terrain play major roles in O_3 formation and ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. Short-term exposures (lasting for a few hours) to 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.

Nitrogen Dioxide. Most NO_2, like O_3, 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_2 are collectively referred to as NO_x and are major contributors to O_3 formation. High concentrations of NO_2 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_2 and chronic pulmonary fibrosis and some increase in bronchitis in children (2 and 3 years old) has also been observed at concentrations below 0.3 parts per million by volume (ppm).

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; therefore, 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. 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.

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. SO_2 is an irritant gas that attacks the throat and lungs and can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 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 can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Fine particulate matter, or $PM_{2.5}$, is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SO_x), NO_x, and VOC. Inhalable or coarse particulate matter, or PM_{10}, is about 1/7 the thickness of a human hair. Major sources of PM_{10} 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.

$PM_{2.5}$ and PM_{10} 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. $PM_{2.5}$ and PM_{10} 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 or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport absorbed gases, such as chlorides or ammonium, into the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ 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. 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%. With the phase-out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming 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.

2.4.2 SDAB Attainment Designation

An area is designated in attainment when it is in compliance with the NAAQS and/or CAAQS. These standards are set by the EPA or CARB for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or the public welfare.

The criteria pollutants of primary concern that are considered in this analysis are O_3, NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$. Although there are no ambient standards for VOCs or NO_x, they are important as precursors to O_3.

The portion of the SDAB where the Project site is located is designated by the EPA as an attainment area for the 1997 8-hour NAAQS for O_3 and as a marginal nonattainment area for the 2008 8-hour NAAQS for O_3.The SDAB is designated in attainment for all other criteria pollutants under the NAAQS with the exception of PM_{10}, which was determined to be unclassifiable.

The SDAB is currently designated nonattainment for O_3 and particulate matter, PM_{10} and $PM_{2.5}$, under the CAAQS. It is designated attainment for the CAAQS for CO, NO_2, SO_2, lead, and sulfates.

Table 4, SDAB Attainment Classification, summarizes the SDAB's federal and state attainment designations for each of the criteria pollutants.

Table 4
SDAB Attainment Classification

Pollutant	Federal Designation[a]	State Designation[b]
O_3 (1-hour)	Attainment[1]	Nonattainment
O_3 (8-hour – 1997) (8-hour – 2008)	Attainment (Maintenance) Nonattainment (Marginal)	Nonattainment
CO	Unclassifiable/Attainment[2]	Attainment
PM_{10}	Unclassifiable[3]	Nonattainment
$PM_{2.5}$	Attainment	Nonattainment
NO_2	Unclassifiable/Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(no federal standard)	Attainment
Hydrogen Sulfide	(no federal standard)	Unclassified
Visibility-Reducing Particles	(no federal standard)	Unclassified

Sources: [a]EPA 2014a; [b]CARB 2014a.
Notes:

1 The federal 1-hour standard of 0.12 ppm was in effect from 1979 through June 15, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in SIPs.
2 The western and central portions of the SDAB are designated attainment, while the eastern portion is designated unclassifiable/attainment.
3 At the time of designation, if the available data does not support a designation of attainment or nonattainment, the area is designated as unclassifiable.

2.4.3 Air Quality Monitoring Data

The SDAPCD operates a network of ambient air monitoring stations throughout San Diego County, which measure ambient concentrations of pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. The SDAPCD monitors air quality conditions at 10 locations throughout the basin. Due to its proximity to the site and similar geographic and climactic characteristics, the Alpine–Victoria Drive monitoring station concentrations for all pollutants, except PM_{10}, CO, and SO_2, are considered most representative of the Project site. The Chula Vista monitoring station is the nearest location to the Project site where CO and SO_2 concentrations are monitored, and the El Cajon–Redwood Avenue monitoring station is the nearest location to the Project site where PM_{10} concentrations are monitored. Ambient concentrations of pollutants from 2009 through 2013 are presented in Table 5, Ambient Air Quality Data. The number of days exceeding the AAQS is shown in Table 6, Frequency of Air Quality Standard Violations. The federal and state 8-hour and state 1-hour O_3 standards were exceeded every year from 2009 to 2013. The state 24-hour PM_{10} standard was exceeded in 2009, and the federal 24-hour $PM_{2.5}$ standard was exceeded in 2009 and 2012. Air quality within the Project region was in compliance with both CAAQS and NAAQS for NO_2, CO, PM_{10} (NAAQS only), and SO_2 during this monitoring period.

Table 5
Ambient Air Quality Data (ppm unless otherwise indicated)

Pollutant	Averaging Time	2009	2010	2011	2012	2013	Most Stringent Ambient Air Quality Standard	Monitoring Station
O_3	8-hour	0.098	0.088	0.093	0.084	0.083	0.070	Alpine – Victoria Drive
	1-hour	0.119	0.105	0.114	0.101	0.095	0.090	
PM_{10}	Annual	25.3 μg/m³	21.3 μg/m³	23.7 μg/m³	23.4 μg/m³	24.4 μg/m³	20 μg/m³	El Cajon – Redwood Avenue
	24-hour	57.0 μg/m³	42.0 μg/m³	41.9 μg/m³	47.2 μg/m³	41.1 μg/m³	50 μg/m³	
$PM_{2.5}$	Annual	12.1 μg/m³	10.8 μg/m³	10.5 μg/m³	10.5μg /m³	10.6 μg/m³	12 μg/m³	El Cajon – Redwood Avenue
	24-hour	56.5 μg/m³	27.7 μg/m³	29.7 μg/m³	37.7 μg/m³	23.1 μg/m³	35 μg/m³	
NO_2	Annual	0.008	0.007	0.006	0.006	0.006	0.030	Alpine – Victoria Drive
	1-hour	0.056	0.052	0.040	0.047	0.040	0.180	
CO	8-hour[1]	1.43	1.56	1.46	1.85	NA	9.0	Chula Vista
	1-hour*	2.0	2.0	1.7	2.2	1.9	20	
SO_2	Annual	0.002	0.001	NA	NA	NA	0.030	Chula Vista

Table 5
Ambient Air Quality Data (ppm unless otherwise indicated)

Pollutant	Averaging Time	2009	2010	2011	2012	2013	Most Stringent Ambient Air Quality Standard	Monitoring Station
	24-hour	0.003	0.002	NA	NA	NA	0.040	

Sources: CARB 2014b; EPA 2014b.
Data represent maximum values
NA = data not available
* Data were taken from EPA 2014b.
1. 2011 and 2012 data were taken from El Cajon – Redwood Avenue monitoring station

Table 6
Frequency of Air Quality Standard Violations

Monitoring Site	Year	Number of Days Exceeding Standard				
		State 1-Hour O3	*State 8-Hour O3*	*National 8-Hour O3*	*State 24-hour PM10**	*National 24-hour PM2.5**
Alpine – Victoria Drive	2009	6	43	22	—	—
	2010	4	20	12	—	—
	2011	4	30	10	—	—
	2012	1	22	7	—	—
	2013	2	27	6	—	—
El Cajon – Redwood Avenue	2009	—	—	—	6.0 (1)	3.0 (1)
	2010	—	—	—	—	—
	2011	—	—	—	—	—
	2012	—	—	—	—	3.3 (1)
	2013	—	—	—	—	—

Source: CARB 2014b.
* Measurements of PM_{10} and $PM_{2.5}$ are usually collected every 6 days and 3 days, respectively. "Number of days exceeding the standards" is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

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3 SIGNIFICANCE CRITERIA AND ANALYSIS METHODOLOGIES

Methodology and Assumptions

Criteria Pollutant Emissions

Air quality impacts associated with the Proposed Project are related to emissions from short-term construction and long-term operations. Construction may affect air quality as a result of construction equipment emissions, fugitive dust from grading and earthmoving, and emissions from vehicles driven to/from the Proposed Project site by construction workers and material and water delivery trucks. Operational emissions would result primarily from maintenance personnel vehicle exhaust (i.e., mobile sources).

Emissions from the construction phase of the Proposed Project were estimated using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2, available online (http://www.caleemod.com/).

The equipment mix anticipated for construction activity was based on information provided by the applicant and best engineering judgment. The equipment mix is meant to represent a reasonably conservative estimate of construction activity. Construction is anticipated to commence in May 2016 and would require approximately 6 months to complete. Details of the construction schedule including heavy construction equipment hours of operation and duration, worker trips, and equipment mix are included in Appendix A. To account for dust control measures in the calculations, it was assumed that the active sites would be watered at least three times daily to comply with SDAPCD Rule 55, resulting in an approximately 61% reduction of particulate matter. A soil binding agent would be applied to the Project site, resulting in an additional 10% reduction in particulate matter.

To determine the maximum daily emissions that would occur during construction, all phases of construction were analyzed to account for earth work required; maximum number of worker vehicle trips, water delivery trips, material delivery trips; and construction equipment fleet operation that would be occurring simultaneously during each construction phase. These estimates were inputted into the CalEEMod air quality model and the most intense construction activities that would occur on any one day was analyzed, reported and compared against the County of San Diego criteria air pollutant thresholds as shown in Table 7 to determine the level of significance. Operational activities were then inputted into the model, including maintenance and personnel activity that would occur on a worst-case day scenario, to determine air quality impacts during operation.

The analysis in this report utilized a methodology for estimating construction and operational emissions for the Proposed Project that has been reviewed and approved by the County of San Diego.

Carbon Monoxide

Mobile-source impacts occur essentially on two scales of motion. Regionally, Project-related construction travel would add to regional trip generation and increase the VMT within the local airshed and the SDAB. Locally, Jacumba construction traffic would be added to the roadway system in the vicinity of the Proposed Project site. If such traffic occurs during periods of poor atmospheric ventilation, is composed of a large number of vehicles "cold-started" and operating at pollution-inefficient speeds, and is operating on roadways already crowded with non-Project traffic, there is a potential for the formation of microscale CO "hotspots" in the area immediately around points of congested traffic. Because of continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the SDAB is steadily decreasing.

Carbon monoxide transport is extremely limited and disperses rapidly with distance from the source. Under certain extreme meteorological conditions, however, CO concentrations near a congested roadway or intersection may reach unhealthy levels, affecting sensitive receptors such as residents, school children, hospital patients, and the elderly. Typically, high CO concentrations are associated with urban roadways or intersections operating at an unacceptable level of service (LOS). CO hotspots have been found to occur only at signalized intersections that operate at or below level of service (LOS) E with peak-hour traffic volumes exceeding 3,000 vehicles (County of San Diego 2007). Projects contributing to adverse traffic impacts may result in the formation of CO hotspots.

Based on the light use of area roadways, it was assumed that no intersections in the vicinity of the Proposed Project site would exceed a peak-hour volume of 3,000 vehicles; refer to Section 3.1.8, Traffic and Transportation of the EIR, for further details.

Toxic Air Contaminants

DPM is characterized as a TAC by CARB. The Office of Environmental Health Hazard Assessment (OEHHA) has identified carcinogenic and chronic noncarcinogenic effects from long-term (chronic) exposure, but it has not identified health effects due to short-term (acute) exposure to DPM. The exhausts of diesel combustion engines used in heavy machinery are the most common sources of DPM, which consists of fine and ultrafine particles that may include compounds containing sulfate, nitrate, metals or carbon elements.

Cancer Risk

Cancer risk is defined as the increase in lifetime probability (chance) of an individual developing cancer due to exposure to a carcinogenic compound, typically expressed as the increased probability in 1 million. The cancer risk from inhalation of a TAC is estimated by calculating the inhalation dose in units of milligrams/kilogram body weight per day based on an ambient concentration in units of micrograms per cubic meter (μg/m^3), breathing rate, and exposure period, and multiplying the dose by the inhalation cancer potency factor, expressed as (milligrams/kilogram body weight per day)$^{-1}$. Typically, cancer risks for residential receptors and similar sensitive receptors are estimated based on a lifetime (70 years) of continuous exposure; however, for the purposes of this analysis, a 6 month exposure scenario was evaluated because the majority of all Project-related DPM would cease following construction activities. It should be noted that construction activity would occur throughout the 108-acre disturbance area; thus, sources of DPM emissions (e.g., heavy-duty construction equipment) would not be concentrated in any one area for the entire construction period.

Cancer risks are typically calculated for all carcinogenic TACs and summed to calculate the overall increase in cancer risk to an individual. The calculation procedure assumes that cancer risk is proportional to concentrations at any level of exposure and that risks from various TACs are additive. This is generally considered a conservative assumption at low doses and is consistent with the current OEHHA-recommended approach.

To estimate the ambient concentrations of DPM resulting from construction activities at nearby sensitive receptors, a dispersion modeling analysis was performed using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) dispersion model (Lakes Environmental 2013), Version 14134. This model can estimate the air quality impacts of single or multiple point, area, or volume sources using site-specific meteorological conditions. A single area source used to represent the emissions from heavy-duty construction equipment and heavy-duty trucks.

The DPM emissions from diesel-powered construction equipment and diesel-powered trucks that would be used during construction are provided in Appendix A. To be conservative, the total pounds of DPM emissions from these sources (both on-site and off-site) over the entire construction period were taken from the annual CalEEMod output (see Appendix A for annual output) and converted to pounds per year by dividing the total by 0.5 (total Project DPM would occur over 6 months). Because the sources of DPM would occur throughout the majority of the Project site, the Project site was modeled as an area source in AERMOD. A release height of 5 meters was provided to represent the midrange of the expected plume rise from frequently used construction equipment during daytime atmospheric conditions.

The annualized DPM emission rate for use in AERMOD was calculated as follows (see Appendix B for details):

Unit emission rate for polygon source = (1 g/s)/418,325m^2 = 2.39 × 10^{-6}

AERMOD unit concentration (μg/m^3)/(1g/s) at maximally exposed individual (MEIR) = 0.0666

CalEEMod total DPM exhaust (tons/yr) = 0.4218

Annualized DPM exhaust (g/s) = 0.4218 tons/yr × 2,000 lbs/ton × 453.6 g/lb ÷ 6 months/yr ÷ 4.3 weeks/month ÷ 6 days/week ÷ 8 hours/day ÷ 3,600 seconds/day × (6/12) = 0.0429

Annualized DPM concentration = 0.0429 g/s × 0.0666 = 0.0029 (μg/m^3)

The cancer risk calculations were performed using the HARP2 model, Risk Assessment Standalone Tool version 15076 for 0.5 years of exposure and a 3rd trimester start date as recommended under the updated OEHHA manual for health risk assessments prepared under the Air Toxics Hot Spots program (OEHHA 2015).a subset of the total construction DPM emissions was calculated based on the average daily acreage over which construction activity would occur during grading. The daily acreage will be variable depending on the activity (e.g., clear and grub, underground trenching, panel installation). For the purpose of this analysis, it was assumed the average daily acreage would be 5 acres; thus, a fraction of 5/108 was applied to the total construction DPM emissions. Total emissions of construction-related exhaust PM_{10}, as a surrogate for DPM, during the overall construction period were calculated and then converted to grams per second for use in the SCREEN3 model. An annualized 1-hour emission rate of 1.06 x 10^{-3} grams per second (g/s) was calculated as

Chronic Hazard

Source: SCREEN3 Model results. See Appendix B for complete results.

In addition to the potential cancer risk, DPM has chronic (i.e., long-term) noncarcinogenic health impacts. The noncancer health impact of an inhaled TAC is measured by the hazard quotient, which is the ratio of the ambient concentration of a TAC in units of μg/m^3 divided by the reference exposure level (REL), also in units of μg/m^3. The inhalation REL is the concentration at or below which no adverse health effects are anticipated. The REL is typically based on health effects to a particular target organ system, such as the respiratory system, liver, or central nervous system. Hazard quotients are then summed for each target organ system to obtain a hazard index. The chronic noncarcinogenic inhalation hazard index for construction activities was calculated by dividing the modeled annual average concentrations of DPM by its REL, which is 5 μg/m^3 (OEHHA 2015)In addition to the potential cancer risk, DPM has chronic (i.e., long-term) noncarcinogenic health impacts. The chronic hazard index was evaluated using the OEHHA/CARB inhalation RELs (CARB 2012). The chronic noncarcinogenic inhalation hazard index for construction activities was calculated by dividing the modeled annual average concentrations of DPM by its REL, which is 5 μg/m^3.

Significance Determination Thresholds

The State of California has developed guidelines to address the significance of air quality impacts based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines, which provides guidance that a project would have a significant environmental impact if it would:

1. Conflict with or obstruct the implementation of the applicable air quality plan;
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for O_3 precursors);
4. Expose sensitive receptors to substantial pollutant concentrations; or
5. Create objectionable odors affecting a substantial number of people.

The following significance thresholds for air quality are based on criteria provided in the County's *Guidelines for Determining Significance – Air Quality* (County of San Diego 2007). The County's guidelines were adapted from Appendix G of the CEQA Guidelines listed above.

A significant impact would result if any of the following would occur:

- The project would conflict with or obstruct the implementation of the County RAQS and/or applicable portions of the SIP.
- The project would result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation:
  - The project would result in emissions that exceed 250 pounds per day of NO_x or 75 pounds per day of VOCs
  - The project would result in emissions of CO that, when totaled with the ambient concentration, would exceed a 1-hour concentration of 20 ppm or an 8-hour average of 9 ppm

- The project would result in emissions of $PM_{2.5}$ that exceed 55 pounds per day
- The project would result in emissions of PM_{10} that exceed 100 pounds per day and increase the ambient PM_{10} concentrations by 5 $\mu g/m^3$ or greater at the maximum exposed individual.

- The project would result in a cumulatively considerable net increase of any criteria pollutant for which the SDAB is in nonattainment under an applicable federal or state ambient air quality standard.
  - The following guidelines for determining significance must be used for determining the cumulatively considerable net increases during the construction phase:
    - A project that has a significant direct impact on air quality with regard to emissions of PM_{10}, $PM_{2.5}$, NO_x, and/or VOCs would also have a significant cumulatively considerable net increase
    - In the event direct impacts from a proposed project are less than significant, a project may still have a cumulatively considerable impact on air quality if the emissions of concern from the proposed project, in combination with the emissions of concern from other proposed projects or reasonably foreseeable future projects within a proximity relevant to the pollutants of concern, are in excess of the guidelines, including the SDAPCD screening-level thresholds.
  - The following guidelines for determining significance must be used for determining the cumulatively considerable net increase during the operational phase:
    - A project that does not conform to the County's RAQS and/or has a significant direct impact on air quality with regard to operation emissions of PM_{10}, $PM_{2.5}$, NO_x, and/or VOCs would also have a significant cumulatively considerable net increase
    - Projects that cause road intersections to operate at or below level of service E (analysis required only when the addition of peak-hour trips from the proposed project and the surrounding projects exceeds 2,000) and create a CO hotspot create a cumulatively considerable net increase of CO.
- The project would expose sensitive receptors to substantial pollutant concentrations:
  - The project places sensitive receptors near CO hotspots or creates CO hotspots near sensitive receptors
  - Project implementation would result in exposure to TACs, resulting in a maximum incremental cancer risk greater than one in 1 million without application of Toxics-Best Available Control Technology (T-BACT) or a health hazard index greater than one would be deemed as having a potentially significant impact.

- The project, which is not an agricultural, commercial, or an industrial activity subject to SDAPCD standards, as a result of implementation, would either generate objectionable odors or place sensitive receptors next to existing objectionable odors, which would affect a considerable number of persons or the public.

SDAPCD

As part of its air quality permitting process, the SDAPCD has established thresholds in Rule 20.2 requiring the preparation of Air Quality Impact Assessments (AQIA) for permitted stationary sources. The SDAPCD sets forth quantitative emission thresholds below which a stationary source would not have a significant impact on ambient air quality. Project-related air quality impacts estimated in this environmental analysis would be considered significant if any of the applicable significance thresholds presented in Table 7, SDAPCD Air Quality Significance Thresholds, are exceeded.

For CEQA purposes, these screening criteria can be used as numeric methods to demonstrate that a project's total emissions would not result in a significant impact to air quality.

Table 7
SDAPCD Air Quality Significance Thresholds

Construction Emissions			
Pollutant	*Total Emissions (Pounds per Day)*		
Respirable Particulate Matter (PM_{10})	100		
Fine Particulate Matter ($PM_{2.5}$)	55		
Oxides of Nitrogen (NO_x)	250		
Oxides of Sulfur (SO_x)	250		
Carbon Monoxide (CO)	550		
Volatile Organic Compounds (VOC)	75*		
Operational Emissions			
Pollutant	*Total Emissions*		
	Pounds per Hour	*Pounds per Day*	*Pounds per Year*
Respirable Particulate Matter (PM_{10})	—	100	15
Fine Particulate Matter ($PM_{2.5}$)	—	55	10
Oxides of Nitrogen (NO_x)	25	250	40
Sulfur Oxides (SO_x)	25	250	40
Carbon Monoxide (CO)	100	550	100
Lead and Lead Compounds	—	3.2	0.6
Volatile Organic Compounds (VOC)	—	75*	13.7

Sources: SDAPCD Rules 1501 (SDAPCD 1995) and 20.2(d)(2) (SDAPCD 1998).
* VOC threshold based on the threshold of significance for VOCs from the South Coast Air Quality Management District for the Coachella Valley as stated in the San Diego County Guidelines for Determining Significance.

The thresholds listed in Table 7 represent screening-level thresholds that can be used to evaluate whether Project-related emissions could cause a significant impact on air quality. Emissions below the screening-level thresholds would not cause a significant impact. In the event that emissions exceed these thresholds, modeling would be required to demonstrate that the Project's total air quality impacts result in ground-level concentrations that are below the CAAQS and NAAQS, including appropriate background levels. For nonattainment pollutants, if emissions exceed the thresholds shown in Table 7, the Proposed Project could have the potential to result in a cumulatively considerable net increase in these pollutants and thus could have a significant impact on the ambient air quality.

With respect to odors, SDAPCD Rule 51 (Public Nuisance) prohibits emission of any material that causes nuisance to a considerable number of persons or endangers the comfort, health, or safety of any person. A project that proposes a use that would produce objectionable odors would be deemed to have a significant odor impact if it would affect a considerable number of off-site receptors.

~~Emissions from the construction phase of the Proposed Project were estimated using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2, available online (http://www.caleemod.com/).~~

~~Construction is anticipated to commence in May 2016 and would require approximately 6 months to complete. Details of the construction schedule including heavy construction equipment hours of operation and duration, worker trips, and equipment mix are included in Appendix A.~~

~~The equipment mix anticipated for construction activity was based on information provided by the applicant and best engineering judgment. The equipment mix is meant to represent a reasonably conservative estimate of construction activity.~~

Compliance With County Code Section 87.428 (Grading Ordinance)

As described in Section 1.2.1.1 of th~~is~~e EIR, the Proposed Project will implement ~~project design feature **AQ-PDF-1**~~measures in compliance with the County's Grading Ordinance to minimize fugitive dust (PM_{10}) during the construction phase of the project to comply with County Code Section 87.428.

4 PROJECT IMPACT ANALYSIS

The significance criteria described in Section 3.0 were used to evaluate impacts associated with the construction and operation of the Proposed Project.

4.1 Conformance to the RAQS

4.1.1 Guideline for the Determination of Significance

Based on Appendix G of the CEQA Guidelines, and the County *Guidelines for Determining Significance – Air Quality*, the Proposed Project would have a significant impact if it would:

- Conflict with or obstruct the implementation of the RAQS and/or applicable portions of the State Implementation Plan (SIP).

4.1.2 Significance of Impacts Prior to Mitigation

As previously discussed, the SDAPCD and SANDAG are responsible for developing and implementing the clean air plans for attainment and maintenance of the ambient air quality standards in the SDAB; specifically, the SIP and RAQS.[2] The federal O_3 maintenance plan, which is part of the SIP, was adopted in 2012. The SIP includes a demonstration that current strategies and tactics will maintain acceptable air quality in the SDAB based on the NAAQS. The RAQS was initially adopted in 1991 and is updated on a triennial basis (most recently in 2009). The RAQS outlines SDAPCD's plans and control measures designed to attain the state air quality standards for O_3. The SIP and RAQS rely on information from CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in San Diego County and the cities in County, to project future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by San Diego County and the cities in the County as part of the development of their general plans.

The SIP and RAQS relies on SANDAG growth projections based on population, vehicle trends, and land use plans developed by the cities and by the County as part of the development of their general plans. As such, projects that involve development that is consistent with the growth anticipated by local plans would be consistent with the SIP and RAQS. However, if a project

[2] For the purpose of this discussion, the relevant federal air quality plan is the ozone maintenance plan (SDAPCD 2012). The RAQS is the applicable plan for purposes of state air quality planning. Both plans reflect growth projections in the SDAB.

involves development that is greater than that anticipated in the local plan and SANDAG's growth projections, the project might be in conflict with the SIP and RAQS and may contribute to a potentially significant cumulative impact on air quality. The current zoning for the site is General Rural (S92), which allows for the following use types that are permitted pursuant to Section 2922 and 2923 of the County Zoning Ordinance: Residential, Family Residential, Essential Services, Fire and Law Enforcement Services, Agricultural Uses, Animal Sales and Services, Recycling Collection Facility, and Green Recycling. The Proposed Project would produce up to 20 MW of solar energy located on approximately 108 acres of the 304-acre site, and approximately 180 acres of Open Space Preserve, which would result in a less intense land use and would generate fewer operational trips than those land uses currently allowed. No residential, commercial, or growth-inducing development is proposed. During operation, O&M staff would visit the Project substation and energy storage facility periodically for switching, panel washing, and other operational activities. Maintenance trucks would be utilized to perform routine maintenance, including but not limited to equipment testing, monitoring, repair, routine procedures to ensure service continuity and standard preventive maintenance. The operation of the Proposed Project would result in a negligible increase in local employment and associated trips. It was conservatively assumed that a maximum of 10 trips per day would be required for operational tasks.

As the Proposed Project would not contribute to local population growth or substantial employment growth and associated vehicle miles traveled (VMT) on local roadways, the Proposed Project is considered accounted for in the SIP and RAQS, and the Proposed Project would not conflict with or obstruct the implementation with local air quality plans. Impacts would be considered **less than significant**.

4.1.3 Mitigation Measures and Design Considerations

No mitigation measures would be required.

4.1.4 Conclusions

The Proposed Project would be in conformance with the RAQS and SIP.

4.2 Conformance to Federal and State Ambient Air Quality Standards

4.2.1 Construction Impacts

4.2.1.1 Guideline for the Determination of Significance

Based on Appendix G of the CEQA Guidelines, and the County *Guidelines for Determining Significance – Air Quality*, the Proposed Project would have a significant impact if it would:

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

4.2.1.2 Significance of Impacts Prior to Mitigation

Construction of the Proposed Project would result in a temporary emissions of criteria air pollutants and fugitive dust as a result of addition of pollutants to the local airshed caused by soil disturbance , dust emissions, and the use of combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling soil water and construction materials to the Project site. 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. Therefore, such emission levels can be approximately estimated only with a corresponding uncertainty in precise ambient air quality impacts. Fugitive dust emissions would primarily result from site preparation and road construction activities. NO_x and CO emissions would primarily result from the use of construction equipment and motor vehicles.

Emissions from the construction phase of the Proposed Project were estimated using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2, available online (http://www.caleemod.com/).

Construction is anticipated to commence in May 2016 and would require approximately 6 months to complete. Detailed information of the construction schedule, including heavy-duty construction equipment, hours of operation and duration, worker trips, and equipment mix, is included in Section 3.0 of Appendix A.

Construction phases and associated durations were provided by the Project proponent and include the following phases, occurring 6 days per week:

- Mobilization/Site preparation (2 weeks)
- Grading and Roads (6 weeks)

- Underground electrical installation (16 weeks)
- PV Racks and Solar Panel Installation (16 weeks)
- Substation and battery energy storage system construction (7 weeks)
- Gen-tie construction (4 weeks)

Completion of the Jacumba Solar Energy Project, including construction of the gen-tie, is anticipated to be completed by October 2016. Grading activities would be specifically associated with road construction following site clearing, grubbing, and grinding. Although all cut and fill quantities would be balanced on site, with approximately 180,000 cubic yard of cut redistributed across the site. Although all soil is planned to be balanced on-site, emissions , modeling included emissions for the potential import of 6,300 cubic yards of soil.

Water demand during construction would vary over the different phases of construction, as shown in Table 1, Construction Water Demand. Based on the estimated water demands for the Proposed Project, an estimated 15 11.3 acre-feet of water would be required during clearing, grubbing, and grinding activities. Following site preparation activities, wWater demand for grading and concrete hydration would amount to 28.238.4 acre-feet. It was assumed that approximately 5 acres of grading would occur each day during that phase of construction. . It should be noted that site preparation and grading activities would occur simultaneously, resulting in combined water import and fugitive dust during this time. This overlap and resulting emissions has been accounting for in the emission calculations as shown in Table 8. Water distributed on site for additional dust control activities for the remainder of construction activities following site preparation and grading would amount 15.48.0 acre-feet. An additional 0.9 acre-feet would be required for other construction needs such as fire protection water supply, washing stations for construction vehicles, gen-tie line, and concrete hydration. The total water demand for construction would then amount to 58.6 acre-feet, requiring an approximate average of forty-seven 6,000-gallon water trucks per day for water import. Specific water import demands (as opposed to average water demand) and associated truck trips for each individual construction phase were accounted for in the emission calculations to determine maximum daily emissions from water import for each individual construction phase. Similar phase-specific vehicle trips and equipment fleet operations were calculated for individual construction phases to determine the maximum worst-case day scenario and reported in Table 8. All water for construction would be imported from off-site sources. For analysis purposes, Padre Dam was assumed as the water source as it is the greatest distance trucks would travel for water (approximately 64 miles). The JCSD, which is also an option for partial water supply, is approximately 2.5 miles from the project site.

Additionally, adherence to County Code Section 87.428, Dust Control Measures and SDAPCD Rule 55 during construction activities will reduce PM_{10} emissions ~~(see **AQ-PDF-1**)~~.

Construction activities would be subject to several control measures per the requirements of the County, SDAPCD rules, and CARB air toxic control measures.

~~Construction is anticipated to commence in May 2016 and would require approximately 6 months to complete. Details of the construction schedule including heavy construction equipment hours of operation and duration, worker trips, and equipment mix are included in Appendix A.~~

~~The equipment mix anticipated for construction activity was based on information provided by the applicant and best engineering judgment. The equipment mix is meant to represent a reasonably conservative estimate of construction activity. To account for dust control measures in the calculations, it was assumed that the active sites would be watered at least three times daily to comply with SDAPCD Rule 55, resulting in an approximately 61% reduction of particulate matter.~~

Table 8, Estimated Daily Maximum Construction Emissions, shows the estimated maximum daily construction emissions associated with the construction phase of the Proposed Project. The maximum daily emissions for each pollutant may occur during different phases of construction.

Table 8
Estimated Daily Maximum Construction Emissions (pounds per day)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2016	18.10~~16.23~~	246.42~~211.32~~	150.52~~130.82~~	0.42~~0.33~~	28.48~~25.40~~	15.55~~14.40~~
Pollutant Threshold	*75*	*250*	*550*	*250*	*100*	*55*
Threshold Exceeded?	No	No	No	No	No	No

Source: See Appendix A for complete results.

As shown, daily construction emissions would not exceed the thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$, and construction impacts to ambient air quality would be **less than significant**.

4.2.1.3 Mitigation Measures and Design Considerations

Impacts would be less than significant, and mitigation would not be required.

4.2.1.4 Conclusions

The emissions associated with construction would be temporary, lasting approximately 6 months. As shown in Table 8, daily construction emissions would not exceed the thresholds for

VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. Construction of the Proposed Project would result in a **less-than-significant impact**.

4.2.2 Operational Impacts

4.2.2.1 Guidelines for the Determination of Significance

Based on Appendix G of the CEQA Guidelines, and the County *Guidelines for Determining Significance – Air Quality*, the Proposed Project would have a significant impact if it would:

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

4.2.2.2 Significance of Impacts Prior to Mitigation

Operation of the Proposed Project would produce VOCs, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions associated with employee vehicles, washing vehicles (heavy-duty diesel water trucks), and service trucks during operations and maintenance for the solar facility. During operation, O&M staff would visit the Project substation and energy storage facility periodically for switching and other operation activities. Maintenance trucks would be utilized to perform routine maintenance, including but not limited to equipment testing, monitoring, repair, routine procedures to ensure service continuity and standard preventive maintenance. Area source emissions generated from landscaping and natural gas use are not anticipated, as no structures on the Project site would not require natural gas consumption or landscaping during Project operations. Emissions from use of consumer products would be minimal. CalEEMod was utilized to estimate daily emissions from proposed vehicular sources (see Appendix A).

Table 9, Estimated Daily Maximum Operational Emissions, presents the maximum daily emissions associated with the operation of the Proposed Project.

Table 9
Estimated Daily Maximum Operational Emissions (pounds per day)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Summer						
Area Source Emissions	—	—	—	—	—	—
Energy Emissions	—	—	—	—	—	—
Mobile Emissions	~~0.20~~0.17	~~0.84~~0.69	~~3.55~~2.97	0.00	0.55	0.15~~6~~

Table 9
Estimated Daily Maximum Operational Emissions (pounds per day)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Winter						
Area Source Emissions	—	—	—	—	—	—
Energy Emissions	—	—	—	—	—	—
Mobile Emissions	~~0.21~~0.18	~~0.90~~0.73	~~3.43~~2.85	0.00	0.55	0.15~~6~~
Maximum Daily Emissions	***0.18~~0.21~~***	***0.73~~0.90~~***	***2.97~~3.43~~***	***0.00~~0.00~~***	***0.55~~0.55~~***	***0.15~~0.16~~***
Pollutant Threshold	*75*	*250*	*550*	*250*	*100*	*55*
Threshold Exceeded?	No	No	No	No	No	No

Source: See Appendix A for complete results.

As shown, daily operational emissions would not exceed the thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$, and operational impacts to ambient air quality would be **less than significant**.

4.2.2.3 Mitigation Measures and Design Considerations

Impacts would be less than significant, and mitigation would not be required.

4.2.2.4 Conclusions

As shown in Table 9, daily operational emissions would not exceed the thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. As such, operation of the Proposed Project would result in a **less-than-significant impact**.

4.3 Cumulatively Considerable Net Increase of Criteria Pollutants

In analyzing cumulative impacts from a proposed project, the analysis must specifically evaluate a project's contribution to the cumulative increase in pollutants for which the SDAB is listed as nonattainment for the state and federal ambient air quality standards. The Proposed Project would have a cumulatively considerable impact if project-generated emissions would exceed thresholds for PM_{10}, $PM_{2.5}$, NO_x, and/or VOCs. If the Proposed Project does not exceed thresholds and is determined to have less-than-significant project-specific impacts, it may still have a cumulatively considerable impact on air quality if the emissions from the Project, in combination with the emissions from other proposed or reasonably foreseeable future projects, are in excess of established thresholds. ~~However, the Proposed Project would be considered to have a cumulative impact only if the Proposed Project's contribution accounts for a significant proportion of the cumulative total emissions.~~

Background ambient air quality, as measured at the monitoring stations maintained and operated by SDAPCD, measures the concentrations of pollutants from existing sources; therefore, past and present project impacts are included in the background ambient air quality data.

Geographic Extent

The geographic extent for the analysis of cumulative impacts related to air quality includes the southeastern corner of the SDAB (San Diego County). ~~Furthermore, t~~The primary air quality impacts of the Proposed Project would occur during construction, since the operational impacts would result from limited vehicle trips for operations, maintenance, washing, and inspection, and would be substantially less than construction impacts. Due to the nonattainment status of the SDAB, the primary air pollutants of concern would be NO_x and VOCs, which are ozone precursors, and PM_{10} and $PM_{2.5}$. NO_x and VOCs are primarily emitted from motor vehicles and construction equipment, while PM_{10} and $PM_{2.5}$ are emitted primarily as fugitive dust during construction. Because of the nature of ozone as a regional air pollutant, emissions from the entire geographic area for this cumulative impact analysis would tend to be important, although maximum ozone impacts generally occur downwind of the area in which the ozone precursors are released. PM_{10} and $PM_{2.5}$ impacts, on the other hand, would tend to occur locally; thus, projects occurring in the same general area and in the same time period would tend to create cumulative air quality impacts.

Existing Cumulative Conditions

Air quality management in the geographic area for the cumulative impact assessment is the responsibility of the SDAPCD. Existing levels of development in San Diego County have led to the nonattainment status for ozone with respect to the CAAQS and NAAQS, and for PM_{10} and $PM_{2.5}$ with respect to the CAAQS. The nonattainment status is based on ambient air quality monitoring generally conducted in the urban portions of the County. No monitoring stations exist in the geographic area for the cumulative impact assessment, but air quality would generally be better than that in the urban areas in the western portion of the County due to the lack of major air pollutant sources. The air quality plans prepared by the SDAPCD reflect future growth under local development plans but are intended to reduce emissions countywide to levels that would comply with the NAAQS and CAAQS through implementation of new regulations at the local, state, and federal levels.

The separate guidelines of significance discussed below have been developed to respond to the following question from the state CEQA Guidelines Appendix G:

- The project will result in a cumulatively considerable net increase of any criteria pollutant for which the SDAB is nonattainment under an applicable federal or state ambient air quality standard (including emissions that exceed the significance thresholds for O_3 precursors listed in Table 7).

4.3.1 Construction Impacts

4.3.1.1 Guidelines for the Determination of Significance

Cumulatively considerable net increases during the construction phase would typically occur if two or more projects near each other are simultaneously under construction. The following guidelines for determining significance must be used for determining the cumulatively considerable net increases during the construction phase:

- A project that has a significant direct impact on air quality with regard to emissions of PM_{10}, $PM_{2.5}$, NO_x, and/or VOCs would also have a significant cumulatively considerable net increase.
- In the event direct impacts from a proposed project are less than significant, a project may still have a cumulatively considerable impact on air quality if the emissions of concern from the proposed project, in combination with the emissions of concern from other proposed projects or reasonably foreseeable future projects within a proximity relevant to the pollutants of concern, are in excess of the guidelines identified in Table 7.

4.3.1.2 Significance of Impacts Prior to Mitigation

In analyzing cumulative impacts from the Proposed Project, the analysis must specifically evaluate a project's contribution to the cumulative increase in pollutants for which the SDAB is designated as nonattainment for the CAAQS and NAAQS. If the Proposed Project does not exceed thresholds and is determined to have less-than-significant project-specific impacts, it may still contribute to a significant cumulative impact on air quality if the emissions from the Proposed Project, in combination with the emissions from other proposed or reasonably foreseeable future projects, are in excess of established thresholds. ~~However, the Proposed Project would only be considered to have a significant cumulative impact if the Proposed Project's contribution accounts for a significant proportion of the cumulative total emissions (i.e., it represents a "cumulatively considerable contribution" to the cumulative air quality impact).~~

The SDAB has been designated as a federal nonattainment area for O_3 and a state nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. PM_{10} and $PM_{2.5}$ emissions associated with construction generally result in near-field impacts. The nonattainment status is the result of cumulative emissions from all sources of these air pollutants and their precursors within the SDAB. As discussed previously, the Proposed Project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials. However, the emissions of all criteria pollutants would be below the significance levels.

As discussed previously, the emissions of all criteria pollutants would be below the significance levels, and pollutants would be primarily localized to the site. Additionally, the Proposed Project would be required to comply with SDAPCD Rule 55, which regulates construction activity capable of generating fugitive dust emissions, including active operations, open storage piles, and inactive disturbed areas, as well as trackout and carryout onto paved roads beyond a project site. Moreover, construction would be short term and temporary in nature, lasting approximately 6 months. Once construction is completed, construction-related emissions would cease. It is possible anticipated that other renewable energy development and land development projects could be constructed in the general vicinity and during the same time frame as the Proposed Project. Although it is anticipated that construction of the Proposed Project would occur concurrently with other development projects, cumulative emissions of VOC, CO and SO_x would be speculative to analyze in terms of construction emission concentrations of these pollutants due to variability in project construction schedules and mobile source trip routes; however, background concentrations of these pollutants are very low relative to the CAAQS and NAAQS in the Proposed Project area such that cumulative impacts to local ambient air quality would be less than significant. Regarding PM_{10}, $PM_{2.5}$ and NO_x, cumulative emissions of these pollutants would be temporary, primarily localized to the project site particularly during site preparation and grading activities, and would not be emitted over long distances. Moreover, as stated in Section 3.1.6, Traffic and Transportation of the EIR, the Proposed Project's contribution to on-road passenger vehicle and road travel would not be substantial. Therefore, the Project's minimal on-site and mobile emissions, when added to other projects in the vicinity, would not result in a cumulatively significant impact.; Hhowever, due to the limited period of construction activities and the localized nature of pollutants internal to the site, the Proposed Project **would not result in a cumulatively considerable impact** during construction.

Additionally, the Proposed Project would implement dust control measures to comply with SDAPCD Rule 55 and County Code Section 87.428, which regulate construction activity capable of generating fugitive dust emissions, including active operations, open storage piles, and inactive disturbed areas, as well as track-out and carry-out onto paved roads beyond a project site, thereby further reducing cumulative emissions. Moreover, construction would be short term and temporary in nature, lasting approximately 6 months. Once construction is completed, construction-related emissions would cease. Therefore, due to Project construction emissions being below significant levels, the limited period of construction activities, and the localized nature of pollutants internal to the site, the cumulative impact for construction emissions of the Proposed Project would be **less than significant**.

4.3.1.3 Mitigation Measures and Design Considerations

Cumulative impacts would be less than significant and mitigation would not be required.

4.3.1.4 Conclusions

Construction of the Proposed Project would not result in a cumulatively considerable net increase of PM_{10}, $PM_{2.5}$, NO_x, or VOCs.

4.3.2 Operational Impacts

4.3.2.1 Guidelines for the Determination of Significance

The guidelines for the consideration of operational cumulatively considerable net increases are treated differently due to the mobile nature of the emissions. The SDAB's RAQS, based on growth projections derived from the allowed general plan densities, are updated every 3 years by SDAPCD and lay out the programs for attaining the CAAQS and NAAQS for O_3 precursors. It is assumed that a project that conforms to the County General Plan, and does not have emissions exceeding the screening-level thresholds, will not create a cumulatively considerable net increase to O_3 since the emissions were accounted for in the RAQS.

The following guidelines for determining significance must be used for determining the cumulatively considerable net increases during the operational phase:

- A project that does not conform to the RAQS and/or has a significant direct impact on air quality with regard to operational emissions of PM_{10}, $PM_{2.5}$, NO_x, and/or VOCs would also have a significant cumulatively considerable net increase.
- Projects that cause road intersections to operate at or below a level of service E (analysis only required when the addition of peak-hour trips from the Proposed Project and the surrounding projects exceeds 2,000) and create a CO hotspot create a cumulatively considerable net increase of CO.

4.3.2.2 Significance of Impacts Prior to Mitigation

With regard to cumulative impacts associated with O_3 precursors, in general, if a project is consistent with the community and general plans, it has been accounted for in the O_3 attainment demonstration contained within the RAQS. As such, it would not cause a cumulatively significant impact on the ambient air quality for O_3. The current zoning for the site is General Rural (S92), which allows for the following use types that are permitted pursuant to Section 2922 and 2923 of the County Zoning Ordinance: Residential, Family Residential, Essential Services, Fire and Law Enforcement Services, Agricultural Uses, Animal Sales and Services, Recycling Collection Facility, and Green Recycling. The Proposed Project would produce up to 20 MW of solar energy located on approximately 108 acres of the 304-acre site, which would result in a less intense land use and would generate fewer operational trips than those land uses currently allowed. The Proposed Project would marginally impact air quality through O&M vehicles frequenting the site during monitoring, washing, inspection, and repair activities throughout the life of the Project. As the Proposed Project does not involve residential, commercial, or other growth-inducing uses that would contribute substantially to local population or employment growth and associated VMT on local roadways, the Proposed Project's contribution to cumulative operational impacts due to motor vehicles would be minimal. Additionally, no significant area source emissions generated from landscaping or natural gas use are anticipated. Therefore, as the Proposed Project does not represent a substantial increase in projected traffic over current conditions, emissions of O_3 precursors (VOCs and NO_x) would be well below the screening-level thresholds and would not result in a significant increase of O_3 precursors during operation. Thus, the Proposed Project would not result in a cumulatively significant impact on O_3 concentrations.

~~Additionally~~Moreover, consistent with the County's guidelines, analysis of potential CO hotspots would not be required for this Project since the Proposed Project does not include uses that would significantly contribute to local population or employment growth or congestion on local roadways. The addition of O&M vehicles would not significantly contribute to peak-hour trips in the Project area or impact roadway intersections. Therefore, the Proposed Project **would not have the potential to create a CO hotspot or a cumulatively considerable net increase of CO**.

4.3.2.3 Mitigation Measures and Design Considerations

Cumulative impacts would be less than significant, and mitigation would not be required.

4.3.2.4 Conclusions

Operation of the Proposed Project would not result in a cumulatively considerable net increase of PM_{10}, $PM_{2.5}$, NO_x, or VOCs nor create a CO hotspot due to cumulative traffic impacts at road intersections.

4.4 Impacts to Sensitive Receptors

Air quality varies as a direct function of the amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. Air quality problems arise when the rate of pollutant emissions exceeds the rate of dispersion. Reduced visibility, eye irritation, and adverse health impacts upon sensitive receptors are the most serious hazards of existing air quality conditions in the area. Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. Air quality regulators typically define sensitive receptors as schools (preschool–12th grade), hospitals, resident care facilities, daycare centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality. However, for the purposes of CEQA analysis in the County, the definition of a sensitive receptor also includes residents. The two primary emissions of concern regarding health effects for land development projects are diesel exhaust particulate matter (DPM) during construction and CO hotspots related to traffic congestion.

4.4.1 Construction Impacts

4.4.1.1 Guidelines for the Determination of Significance

A significant impact would result if:

- Project implementation will result in exposure to TACs resulting in a maximum incremental cancer risk greater than 1 in 1 million without application of Toxics-Best Available Control Technology (T-BACT) or a health hazard index greater than 1 would be deemed as having a potentially significant impact.

4.4.1.2 Significance of Impacts Prior to Mitigation

Carbon Monoxide

Based on the light use of area roadways, it was assumed that no intersections in the vicinity of the Proposed Project site would exceed a peak-hour volume of 3,000 vehicles; refer to Section 3.1.8, Traffic and Transportation, for further details. As stated in Section 3.1.8, the daily construction trips associated with the Proposed Project during the most intense 6 weeks of construction (grading) would total 149 daily round trips. This results from 126 workers, and 10 water delivery truck trips, which have a passenger car equivalent of 1.5, and 2 material haul truck trips with a passenger car equivalent of 4[3]. While project construction would generate a maximum of 298 ADT, or 149 daily round trips, at the most intense worker period of construction activities, trip generation and distribution for workers and delivery trucks would ultimately vary depending on the phase of construction. A traffic impact study for the Proposed Project was not prepared. Because a traffic impact study was not prepared and was not warranted, the existing delay and LOS at unsignalized intersections that would be encountered by construction traffic is not known. However, the Project area is primarily rural in character, the population is low, and local roads are typically traversed by residents and occasional government vehicles. Regional travel through the area is provided by Old Highway 80; however, I-8 receives the majority of regional through traffic. Therefore, for the purposes of this analysis and due to the local character of the Project area, intersections along the anticipated construction access routes are assumed to be operating at an acceptable LOS with little delay.

Additionally, construction traffic would be temporary and short-term in nature, and would occur intermittently throughout the various phases of construction from site grading and panel installation to the construction of the substation and energy storage facility. Moreover, project-generated trips would be in rural areas where the existing traffic is light and they would include components that would be spread throughout the day. Therefore, for these reasons, construction-related traffic is not expected to impact local intersections and cause an exceedance of the CO CAAQS. Impacts would be **less than significant**.

~~Construction Equipment and Vehicles~~Toxic Air Contaminants – Diesel Particulate Matter

Project construction would result in emissions of DPM from heavy-duty construction equipment and trucks operating on the Project site (e.g., water trucks). DPM is characterized as a TAC by CARB. The Office of Environmental Health Hazard Assessment (OEHHA) has identified carcinogenic and chronic noncarcinogenic effects from long-term (chronic) exposure, but it has not identified health effects due to short-term (acute) exposure to DPM. The nearest sensitive receptor is a single-family residence located approximately 3,500 feet (1,067 meters) north of the Project site.

~~Cancer risk is defined as the increase in lifetime probability (chance) of an individual developing cancer due to exposure to a carcinogenic compound, typically expressed as the increased probability in 1 million. The cancer risk from inhalation of a TAC is estimated by calculating the inhalation dose in units of milligrams/kilogram body weight per day based on an ambient concentration in units of micrograms per cubic meter (μg/m³), breathing rate, and exposure~~

[3] 126(workers) × 2(each way trips) = 252 Worker ADT. 10 (water trucks) × 2 (each way trips) × 1.5 (pce) = 30 Water ADT. 2 (dirt haul truck) × 2 (each way trips) × 4 (pce) = 16 Delivery ADT. Total = [252+30+16] 298 ADT.

period, and multiplying the dose by the inhalation cancer potency factor, expressed as (milligrams/kilogram body weight per day)$^{-1}$. Typically, cancer risks for residential receptors and similar sensitive receptors are estimated based on a lifetime (70 years) of continuous exposure; however, for the purposes of this analysis, a 1-year6-month exposure scenario was evaluated because the majority of all Project-related DPM would cease following construction activities. It should be noted that construction activity would occur throughout the 108-acre disturbance area; thus, sources of DPM emissions (e.g., heavy-duty construction equipment) would not be concentrated in any one area for the entire construction period.

Cancer risks are typically calculated for all carcinogenic TACs and summed to calculate the overall increase in cancer risk to an individual. The calculation procedure assumes that cancer risk is proportional to concentrations at any level of exposure and that risks from various TACs are additive. This is generally considered a conservative assumption at low doses and is consistent with the current OEHHA-recommended approach.

The noncancer health impact of an inhaled TAC is measured by the hazard quotient, which is the ratio of the ambient concentration of a TAC in units of μg/m^3 divided by the reference exposure level (REL), also in units of μg/m^3. The inhalation REL is the concentration at or below which no adverse health effects are anticipated. The REL is typically based on health effects to a particular target organ system, such as the respiratory system, liver, or central nervous system. Hazard quotients are then summed for each target organ system to obtain a hazard index.

To estimate the ambient concentrations of DPM resulting from construction activities at nearby sensitive receptors, a dispersion modeling analysis was performed using the Lakes Environmental SCREEN-View air quality dispersion model, Version 3.5.0 (Lakes Environmental 2011), which uses the EPA's SCREEN3 model.

The DPM emissions from diesel-powered construction equipment and on-site diesel-powered trucks that would be used during construction are provided in Appendix BA. The To be conservative, the total pounds of DPM emissions- from these sources (both on-site and off-site) over the entire construction period were taken from the annual CalEEMod output (see Appendix A for annual output) and converted to pounds per year by dividing the total by 0.5 (total Project DPM would occur over 6 months). Because the sources of DPM would occur throughout the majority of the Project site, the Project site was modeled as an area source in AERMOD. A release height of 5 meters was provided to represent the midrange of the expected plume rise from frequently used construction equipment during daytime atmospheric conditions. a subset of the total construction DPM emissions was calculated based on the average daily acreage over which construction activity would occur during grading. The daily acreage will be variable depending on the activity (e.g., clear and grub, underground trenching, panel installation). For

~~the purpose of this analysis, it was assumed the average daily acreage would be 5 acres; thus, a fraction of 5/108 was applied to the total construction DPM emissions. Total emissions of construction-related exhaust PM_{10}, as a surrogate for DPM, during the overall construction period were calculated and then converted to grams per second for use in the SCREEN3 model. An annualized 1-hour emission rate of 1.06×10^{-3} grams per second (g/s) was calculated as follows~~The annualized DPM emission rate for use in AERMOD was calculated as follows (see Appendix B for details):

Unit emission rate for polygon source = (1 g/s)/418,325m^2 = 2.39×10^{-6}

AERMOD unit concentration (μg/m^3)/(1g/s) at maximally exposed individual (MEIR) = 0.0666

CalEEMod total DPM exhaust (tons/yr) = 0.4218

Annualized DPM exhaust (g/s) = 0.4218 tons/yr × 2,000 lbs/ton × 453.6 g/lb ÷ 6 months/yr ÷ 4.3 weeks/month ÷ 6 days/week ÷ 8 hours/day ÷ 3,600 seconds/day × (6/12) = 0.0429

Annualized DPM concentration = 0.0429 g/s × 0.0666 = 0.0029 (μg/m^3) ~~1,598 lb/year PM_{10} during construction~~

~~1,598 lb/year × 5/108 × 453.6 g/lb ÷ 8760 hours/year ÷ 3600 seconds/hour = 1.06×10^{-3} g/second~~

~~The emissions from heavy-duty equipment and trucks are represented by a single volume source with an area of 5 acres. The following parameters were used in the SCREEN3 model to represent the sources of DPM emissions on the Project site:~~

- ~~Source type: volume~~
- ~~Source height: 5 meters~~
- ~~Initial vertical dimension: 1.16 meters (corresponding to a 5-meter release height divided by 4.3 per SCREEN3 guidance)~~
- ~~Initial lateral dimension: 33.08 meters (corresponding to the side of a 5-acre site divided by 4.3 per SCREEN3 guidance)~~
- ~~Receptor height: 2.0 meters~~
- ~~Rural setting~~
- ~~Simple terrain~~

The default regulatory mixing height and anemometer height options were selected for the purposes of modeling. As noted above, the closest home is located within 3,500 feet (1,067 meters) of the Project site.

The modeled maximum annual concentration at the maximally exposed individual (located 1,067 meters from the volume sources) is shown in Table 10, Summary of Average DPM Concentrations – Construction Equipment and Trucks. The results of the AERMOD modeling are provided in Appendix B.

Table 10
Summary of Average DPM Concentration Construction Equipment and Trucks

Receptor	Annual Average Concentration μg/m3
Maximally Exposed Individual (1,067 meters)	0.0029

Source: See Appendix B for complete results.

The results of the SCREEN3 modeling are provided in Appendix B. AERMOD-ready meteorological data provided by the SDACPD for use in AERMOD. The data were collected by SDAPCD and processed using EPA's AERMET meteorological data processor.

Cancer Risk

The cancer risk calculations were performed by multiplying the predicted annual DPM concentrations from AERMOD by the appropriate risk values. The exposure and risk equations that are used to calculate the cancer risk at residential receptors are taken from the updated OEHHA manual for health risk assessments prepared under the Air Toxics Hot Spots program (OEHHA 2015). SCREEN3 was run under Stability Class D (neutral, daytime condition). This condition is a likely worst-case (i.e., most stable for dispersion) daytime condition during which construction would occur. Accordingly, using the maximum modeled concentration would result in a conservative (i.e., health protective) estimate of the associated health effects. Per EPA guidance (EPA 1992), the maximum modeled 1-hour concentration was then multiplied by 0.1 to simulate the annual average concentration. The modeled annual average concentration at the maximally exposed individual (located 1,067 meters from the volume source) is shown in Table 10, Summary of Average DPM Concentrations – Construction Equipment and Trucks.

Table 10
Summary of Average DPM Concentrations – Construction Equipment and Trucks

Receptor	Modeled 1-hour	Modeled Annual

	Concentration μg/m³	Concentration μg/m³
Maximally Exposed Individual – Residential	0.0993	0.0099

Source: SCREEN3 Model results. See Appendix B for complete results.

The cancer risk calculations were performed by multiplying the predicted annual DPM concentrations from SCREEN3 by the appropriate risk values. The exposure and risk equations that are used to calculate the cancer risk at residential receptors are taken from the OEHHA manual for health risk assessments prepared under the Air Toxics Hot Spots program (OEHHA 2003). As noted, while the nearest sensitive receptor is located approximately 1,067 meters from the edge of the volume source representing the construction DPM emissionsusing the HARP2 model, Risk Assessment Standalone Tool version 15076 for 0.5 years of exposure and a 3rd trimester start date as recommended under the updated OEHHA manual for health risk assessments prepared under the Air Toxics Hot Spots program (OEHHA 2015).

Table 11, Summary of Maximum Modeled Cancer Risks – Construction DPM Emissions, shows the maximum modeled annual DPM concentration for the maximally exposed individual and the associated cancer risk.

Table 11
Summary of Maximum Modeled Cancer Risks Construction DPM Emissions

Receptor	DPM Annual Concentration (μg/m³)	Cancer Risk
Maximally Exposed Individual (1,067 meters)	0.0029	0.3205 in 1 million

Source: See Appendix B for complete results.

The potential exposure pathway for DPM includes inhalation only. Cancer risks were evaluated using the inhalation Cancer Potency Factor published by the OEHHA and CARB (CARB 2012). The cancer risks were calculated using the "derived (adjusted)" approach in the OEHHA risk assessment manual. The cancer potency factor for DPM is 1.1 per milligram per kilogram of body weight per day (1.1 $(mg/kg\text{-}day)^{-1}$). The potential exposure through other pathways (e.g., ingestion) requires substance and site-specific data, and the specific parameters for DPM are not known for these pathways.

The following equations were used to calculate the cancer risk due to inhalation using the modeled DPM concentrations:

Risk = Inhalation potency factor * Dose Inhalation (1)

where:

Inhalation potency factor = 1.1 $(mg/kg\text{-}day)^{-1}$ for DPM,

and:

Dose Inhalation = C_{air}*DBR*A*EF*ED*10^{-6} / AT (2)

where:

C_{air} = concentration of DPM in $\mu g/m^3$
DBR = breathing rate in liter per kilogram of body weight per day
A = inhalation absorption factor (1 for DPM)
EF = exposure frequency in days per year
ED = exposure duration in years
AT = averaging time period over which exposure is averaged in days (25,550 days for 70 years)

For the derived (adjusted) cancer risk calculation, the breathing rate is equal to the 80th percentile or 302 liters per kilogram of body weight per day (L/kg/day) per CARB and OEHHA guidance (CARB and OEHHA 2003).

Table 11, Summary of Maximum Modeled Cancer Risks – Construction Equipment and Trucks, shows tThe maximum modeled annual DPM concentration for the maximally exposed individual and the associated cancer risk was calculated to be 0.3205 in 1 million. The cancer risk at a sensitive receptor is less than the County significance threshold of 1 in 1 million for cancer impacts.

Table 11
Summary of Maximum Modeled Cancer Risks – Construction Equipment and Trucks

Receptor	DPM Annual Concentration $\mu g/m^3$	Cancer Risk
Maximally Exposed Individual – Residential	0.0099	0.036 in 1 million

Chronic Hazard

Source: SCREEN3 Model results. See Appendix B for complete results.

In addition to the potential cancer risk, DPM has chronic (i.e., long-term) noncarcinogenic health impacts. The chronic hazard index was evaluated using the OEHHA inhalation RELs. The chronic noncarcinogenic inhalation hazard index for construction activities was calculated by dividing the modeled annual average concentrations of DPM by its REL, which is 5 $\mu g/m^3$ (OEHHA 2015)In

~~addition to the potential cancer risk, DPM has chronic (i.e., long-term) noncarcinogenic health impacts. The chronic hazard index was evaluated using the OEHHA/CARB inhalation RELs (CARB 2012). The chronic noncarcinogenic inhalation hazard index for construction activities was calculated by dividing the modeled annual average concentrations of DPM by its REL, which is 5 μg/m^3~~.

Table ~~12~~12, Summary of Maximum Chronic Hazard Index – Construction Equipment and Trucks, shows the maximum modeled annual DPM concentration for the maximally exposed individual and the associated maximum chronic hazard index. The chronic hazard index at this receptor is less than the County significance threshold of 1.0 for noncarcinogenic health impacts.

Table 12
Summary of Maximum Chronic Hazard Index – Construction Equipment and Trucks

Receptor	DPM Concentration μg/m^3	Chronic Hazard Index
Maximally Exposed Individual – Residential	0. 0029~~0099~~	0.~~002~~0006

Source: ~~SCREEN3 Model results.~~ See Appendix B for complete results.

In summary, the maximum anticipated cancer risk associated with the Proposed Project is 0.~~032~~ 3205 in 1 million at maximally exposed sensitive receptors, based on a ~~1-year~~6 month exposure scenario. The assessment also finds that the chronic hazard index for noncancer health impacts are well below 1.0 at the maximally exposed individual. As such, the exposure of Project-related TAC emission impacts to sensitive receptors during construction of the Proposed Project would be **less than significant**.

4.4.1.3 Mitigation Measures and Design Considerations

Mitigation would not be required.

4.4.1.4 Conclusions

Construction of the Proposed Project would not result in significant impacts to sensitive receptors.

4.4.2 Operational Impacts

4.4.2.1 Guidelines for the Determination of Significance

A significant impact would result if:

- The project places sensitive receptors near CO hotspots or creates CO hotspots near sensitive receptors.
- Project implementation will result in exposure to TACs resulting in a maximum incremental cancer risk greater than 1 in 1 million without application of Toxics-Best Available Control Technology (T-BACT) or a health hazard index greater than one would be deemed as having a potentially significant impact.

The potential for the Proposed Project to create CO hotspots was discussed previously in Section 4.3.2.2. The Proposed Project would not result in a significant impact with respect to this threshold.

In addition to impacts from criteria pollutants, Project impacts may include emissions of pollutants identified by the state and federal government as TACs or hazardous air pollutants (HAPs). State law has established the framework for California's TAC identification and control program, which is generally more stringent than the federal program and is aimed at HAPs that are a problem in California. The state has formally identified more than 200 substances as TACs, including the federal HAPs, and adopts appropriate control measures for sources of these TACs. As examples, TACs include acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and DPM. Some of the TACs are groups of compounds that contain many individual substances (for example, copper compounds and polycyclic organic matter).

In San Diego County, SDAPCD Rule 1210 implements the public notification and risk reduction requirements of state law, and requires facilities with high potential health risk levels to reduce health risks below significant risk levels (SDAPCD 1996). In addition, Rule 1200 establishes acceptable risk levels and emission control requirements for new and modified facilities that may emit additional TACs (SDAPCD 1996). Under Rule 1200, permits to operate may not be issued when emissions of TACs result in an incremental cancer risk greater than 1 in 1 million without application of T-BACT, or an incremental cancer risk greater than 10 in 1 million with application of T-BACT, or a health hazard index (chronic and acute) greater than one (SDAPCD 1996). The human health risk analysis is based on the time, duration, and exposures expected. T-BACT will be determined on a case-by-case basis; however, examples of T-BACT include diesel particulate filters, catalytic converters, and selective catalytic reduction technology.

4.4.2.2 Significance of Impacts Prior to Mitigation

The nearest sensitive receptor is a single-family residence located approximately 3,500 feet (north of the Project site). Operation of the proposed solar energy plant, by its nature, would not generate a significant amount of TACs in the immediate area and due to the substantial distance between the nearest sensitive receptor and energy plant, emissions would not result in significant impacts. Additionally, the Proposed Project would not require the extensive use of diesel trucks during operation but would include inspection vehicles, washing vehicles, and a service truck. As such, the exposure of Project-related TAC emission impacts to sensitive receptors during operation of the Proposed Project would be **less than significant**.The nearest sensitive receptor is a single-family residence located approximately 3,500 feet (1,067 meters) north of the Project site. Because the Proposed Project would consist of construction of solar panels and associated infrastructure for the procurement and delivery of renewable energy, the Proposed Project, by its nature, would not generate a significant amount of TACs in the immediate area. Additionally, the Proposed Project would not require the extensive use of diesel trucks during operation but would include employee commute vehicles, washing vehicles, and a service truck. As such, the exposure of Project-related TAC emission impacts to sensitive receptors during operation of the Proposed Project would be **less than significant**.

4.4.2.3 Mitigation Measures and Design Considerations

Mitigation would not be required.

4.4.2.4 Conclusions

Operation of the Proposed Project would not result in significant impacts to sensitive receptors.

4.5 Odor Impacts

Odors are a form of air pollution that is most obvious to the general public. Odors can present significant problems for both the source and surrounding community. Although offensive odors seldom cause physical harm, they can be annoying and cause concern.

4.5.1 Guidelines for the Determination of Significance

Based on Appendix G of the CEQA Guidelines, and the County *Guidelines for Determining Significance – Air Quality*, the Proposed Project would have a significant impact if:

- The project, which is not an agricultural, commercial, or an industrial activity subject to SDAPCD standards, as a result of implementation, would either generate objectionable odors or place sensitive receptors next to existing objectionable odors, which would affect a considerable number of persons.

The State of California Health and Safety Code, Division 26, Part 4, Chapter 3, Section 41700 and SDAPCD Rule 51, commonly referred to as public nuisance law, prohibits emissions from any source whatsoever in such quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to the public health or damage to property. The potential for an operation to result in odor complaints from a "considerable" number of persons in the area will be considered to be a significant, adverse odor impact.

Projects required to obtain permits from SDAPCD are evaluated by SDAPCD staff for potential odor nuisance, and conditions may be applied (or control equipment required) where necessary to prevent occurrence of public nuisance.

Odor issues are very subjective by the nature of odors themselves and due to the fact that their measurements are difficult to quantify. As a result, this guideline is qualitative, and each project will be reviewed on an individual basis, focusing on the existing and potential surrounding uses and location of sensitive receptors.

4.5.2 Significance of Impacts Prior to Mitigation

4.5.2.1 Construction

Section 6318 of the San Diego County Zoning Ordinance requires that all commercial and industrial uses be operated so as not to emit matter causing unpleasant odors that are perceptible by the average person at or beyond any lot line of the lot containing said uses. Section 6318 goes on to further provide specific dilution standards that must be met "at or beyond any lot line of the lot containing the uses" (County of San Diego 1979). SDAPCD Rule 51 (Public Nuisance) also prohibits emission of any material that causes nuisance to a considerable number of persons or endangers the comfort, health, or safety of any person. A proposed project that involves a use that would produce objectionable odors would be deemed to have a significant odor impact if it would affect a considerable number of off-site receptors. The nearest sensitive receptor is a single-family residence located approximately 3,500 feet (1,067 meters) north of the Project site.

Construction of Proposed Project components would result in the emission of diesel fumes and other odors typically associated with construction activities. These compounds would be emitted in varying amounts on the Project site depending on where construction activities are occurring. Sensitive receptors located in the vicinity of the construction site may be affected. Odors are highest near the source and would quickly dissipate off site. Any odors associated with construction activities would be temporary and would cease upon Project completion.

4.5.2.2 Operations

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 solar facility would not be associated with a land use that would generate objectionable odors within the Project vicinity. As such, a solar facility would not generate objectionable odors off site. Operations would consist of standard service and personnel vehicles which would visit the site regularly during inspection, maintenance, and washing activities. Thus, the impacts associated with odors would be **less than significant**.

4.5.3 Mitigation Measures and Design Considerations

No mitigation measures or design considerations would be required.

4.5.4 Conclusion

Although odor impacts are unlikely, the Proposed Project would be required to comply with the County odor policies enforced by SDAPCD, including Rule 51 in the event a nuisance complaint occurs, and County Code Sections 63.401 and 63.402, which prohibit nuisance odors and identify enforcement measures to reduce odor impacts to nearby receptors. Therefore, impacts associated with objectionable odors would be less than significant.

5 GLOBAL CLIMATE CHANGE

5.1 The Greenhouse Effect and Greenhouse Gases

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind, lasting for an extended period (decades or longer).

Gases that trap heat in the atmosphere are often called "greenhouse gases" (GHGs). The greenhouse effect traps heat in the troposphere through a threefold process as follows: Short-wave radiation emitted by the Sun is absorbed by the Earth; the Earth emits a portion of this energy in the form of long-wave radiation; and GHGs in the upper atmosphere absorb this long-wave radiation and emit it into space and toward the Earth. This "trapping" of the long-wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect. Principal GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), and water vapor (H_2O). Some GHGs, such as CO_2, CH_4, and N_2O, occur naturally and are emitted to the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely byproducts of fossil fuel combustion, whereas CH_4 results mostly from off-gassing associated with agricultural practices and landfills. Man-made GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3), which are associated with certain industrial products and processes (CAT 2006).

The greenhouse effect is a natural process that contributes to regulating the earth's temperature. Without it, the temperature of the Earth would be about 0°F (−18°C) instead of its present 57°F (14°C). Global climate change concerns are focused on whether human activities are leading to an enhancement of the greenhouse effect (National Climatic Data Center 2009).

The effect each GHG has on climate change is measured as a combination of the mass of its emissions and the potential of a gas or aerosol to trap heat in the atmosphere, known as its "global warming potential" (GWP). GWP varies between GHGs; for example, the GWP of CH_4 is 21, and the GWP of N_2O is 310. Total GHG emissions are expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG gas emissions are typically measured in terms of pounds or tons of "CO_2 equivalent" (CO_2E).[4]

[4] The CO_2 equivalent for a gas is derived by multiplying the mass of the gas by the associated GWP, such that MT CO_2E = (metric tons of a GHG) × (GWP of the GHG). For example, the GWP for CH_4 is 21. This means that emissions of 1 metric ton of methane are equivalent to emissions of 21 metric tons of CO_2.

5.2 Contributions to Greenhouse Gas Emissions

In 2012, the United States produced 6,525 million metric tons (MMT) of CO_2E (EPA 2014c). The primary GHG emitted by human activities in the United States was CO_2, representing approximately 82.5% of total GHG emissions. The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 94.2% of the CO_2 emissions.

According to the 2012 GHG inventory data compiled by CARB for the California Greenhouse Gas Inventory for 2000–2012, California emitted 459 MMT CO_2E of GHGs, including emissions resulting from out-of-state electrical generation (CARB 2014c). The primary contributors to GHG emissions in California are transportation, industry, electric power production from both in-state and out-of-state sources, agriculture, and other sources, which include commercial and residential activities. These primary contributors to California's GHG emissions and their relative contributions in 2012 are presented in Table 13, GHG Sources in California.

Table 13
GHG Sources in California

Source Category	Annual GHG Emissions (MMT CO_2E)	% of Total[a]
Agriculture	37.86	8.3%
Commercial uses	14.20	3.1%
Electricity generation	95.09[b]	20.7%
Industrial uses	89.16	19.4%
Recycling and waste	8.49	1.9%
Residential uses	28.09	6.1%
Transportation	167.38	36.5%
High GWP substances	18.41	4.0%
Totals[c]	**458.68**	**100%**

Source: CARB 2014c.
[a] Percentage of total has been rounded.
[b] Includes emissions associated with imported electricity, which account for 44.07 MMT CO_2E annually.
[c] Totals may not sum due to rounding.

5.3 Potential Effects of Human Activity on Climate Change

According to CARB, some of the potential impacts in California of global warming may include loss in snow pack, sea level rise, more extreme heat days per year, more high O3 days, more large forest fires, and more drought years (CARB 2006). Several recent studies have attempted to explore the possible negative consequences that climate change, left unchecked, could have in California. These reports acknowledge that climate scientists' understanding of the complex global climate system, and the interplay of the various internal and external factors that affect climate change, remains too limited to yield scientifically valid conclusions on such a localized scale. Substantial work has been done at the international and national level to evaluate climatic impacts, but far less information is available on regional and local impacts.

The primary effect of global climate change has been a rise in average global tropospheric temperature of 0.2°C (0.36°F) per decade, determined from meteorological measurements worldwide between 1990 and 2005.

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. Climate change is already affecting California: Average temperatures have increased, leading to more extreme hot days and fewer cold nights; shifts in the water cycle have been observed, with less winter precipitation falling in the form of snow, and both snowmelt and rainwater running off earlier in the year; sea levels have risen; and wildland fires are becoming more frequent and intense due to dry seasons that start earlier and end later (CAT 2010a). Climate change modeling using 2000 emission rates shows that further warming would occur, which would induce further changes in the global climate system during the current century. Changes to the global climate system and ecosystems and to California would include, but would not be limited to:

- The loss of sea ice and mountain snowpack resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures (IPCC 2007)
- A rise in global average sea level primarily due to thermal expansion and melting of glaciers and ice caps and the Greenland and Antarctic ice sheets (IPCC 2007)
- Changes in weather that includes widespread changes in precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones (IPCC 2007)
- A decline of Sierra snowpack, which accounts for approximately half of the surface water storage in California, by 70% to as much as 90% over the next 100 years (CAT 2006)
- An increase in the number of days conducive to O3 formation by 25% to 85% (depending on the future temperature scenario) in high O3 areas of Los Angeles and the San Joaquin Valley by the end of the 21st century (CAT 2006)
- High potential for erosion of California's coastlines and sea water intrusion into the Delta and levee systems due to the rise in sea level (CAT 2006).

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6 REGULATORY SETTING

6.1 Federal Activities

Massachusetts vs. EPA. On April 2, 2007, in Massachusetts v. EPA, the Supreme Court directed the EPA Administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA Administrator is required to follow the language of Section 202(a) of the CAA. On December 7, 2009, the Administrator signed a final rule with two distinct findings regarding GHGs under Section 202(a) of the CAA:

- The Administrator found that elevated concentrations of GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations. This is referred to as the "endangerment finding."
- The Administrator further found the combined emissions of GHGs—CO_2, CH_4, N_2O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is referred to as the "cause or contribute finding."

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the CAA.

Energy Independence and Security Act. On December 19, 2007, President Bush signed the Energy Independence and Security Act of 2007. Among other key measures, the Act would do the following, which would aid in the reduction of national GHG emissions:

1. Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) requiring fuel producers to use at least 36 billion gallons of biofuel in 2022
2. Set a target of 35 miles per gallon (mpg) for the combined fleet of cars and light trucks by model year 2020 and directs National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks
3. Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

6.2 State of California

AB 1493. In a response to the transportation sector accounting for more than half of California's CO_2 emissions, AB 1493 (Pavley) was enacted on July 22, 2002. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles whose primary use is noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. On March 29, 2010, the CARB Executive Officer approved revisions to the motor vehicle GHG standards to harmonize the state program with the national program for 2012–2016 model years (see "EPA and NHTSA Joint Final Rule for Vehicle Standards" above). The revised regulations became effective on April 1, 2010.

Executive Order S-3-05. In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010; to 1990 levels by 2020; and to 80% below 1990 levels by 2050. The California EPA secretary is required to coordinate efforts of various agencies to collectively and efficiently reduce GHGs. The Climate Action Team is responsible for implementing global warming emissions reduction programs. Representatives from several state agencies comprise the Climate Action Team. The Climate Action Team fulfilled its report requirements through the March 2006 Climate Action Team Report to the governor and the legislature (CAT 2006).

The 2009 *Climate Action Team Biennial Report* (CAT 2010b), published in April 2010, expands on the policy outlined in the 2006 assessment. The 2009 report provides new information and scientific findings regarding the development of new climate and sea level projections using new information and tools that have recently become available and evaluates climate change within the context of broader social changes, such as land use changes and demographics. The 2009 report also identifies the need for additional research in several different aspects that affect climate change in order to support effective climate change strategies. The aspects of climate change determined to require future research include vehicle and fuel technologies, land use and smart growth, electricity and natural gas, energy efficiency, renewable energy and reduced carbon energy sources, low GHG technologies for other sectors, carbon sequestration, terrestrial sequestration, geologic sequestration, economic impacts and considerations, social science, and environmental justice.

Subsequently, the 2010 *Climate Action Team Report to Governor Schwarzenegger and the California Legislature* (CAT 2010a) reviews past climate action milestones including voluntary reporting programs, GHG standards for passenger vehicles, the Low Carbon Fuel Standard

(LCFS), a statewide renewable energy standard, and the cap-and-trade program. Additionally, the 2010 report includes a cataloguing of recent research and ongoing projects; mitigation and adaptation strategies identified by sector (e.g., agriculture, biodiversity, electricity, and natural gas); actions that can be taken at the regional, national, and international levels to mitigate the adverse effects of climate change; and today's outlook on future conditions.

AB 32. In furtherance of the goals established in Executive Order S-3-05, the legislature enacted AB 32 (Núñez and Pavley), the California Global Warming Solutions Act of 2006, which Governor Schwarzenegger signed on September 27, 2006. The GHG emissions limit is equivalent to the 1990 levels, which are to be achieved by 2020.

CARB has been assigned to carry out and develop the programs and requirements necessary to achieve the goals of AB 32. Under AB 32, CARB must adopt regulations requiring the reporting and verification of statewide GHG emissions. This program will be used to monitor and enforce compliance with the established standards. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 allows CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted.

The first action under AB 32 resulted in the adoption of a report listing early action GHG emission reduction measures on June 21, 2007. The early actions include three specific GHG control rules. On October 25, 2007, CARB approved an additional six early action GHG reduction measures under AB 32. The three original early-action regulations meeting the narrow legal definition of "discrete early action GHG reduction measures" include:

1. A low-carbon fuel standard to reduce the "carbon intensity" of California fuels
2. Reduction of refrigerant losses from motor vehicle air conditioning system maintenance to restrict the sale of "do-it-yourself" automotive refrigerants
3. Increased methane capture from landfills to require broader use of state-of-the-art methane capture technologies.

The additional six early-action regulations, which were also considered "discrete early action GHG reduction measures," consist of:

1. Reduction of aerodynamic drag, and thereby fuel consumption, from existing trucks and trailers through retrofit technology
2. Reduction of auxiliary engine emissions of docked ships by requiring port electrification

3. Reduction of PFCs from the semiconductor industry
4. Reduction of propellants in consumer products (e.g., aerosols, tire inflators, and dust removal products)
5. Requirements that all tune-up, smog check, and oil change mechanics ensure proper tire inflation as part of overall service in order to maintain fuel efficiency
6. Restriction on the use of SF_6 from non-electricity sectors if viable alternatives are available.

As required under AB 32, on December 6, 2007, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 MMT CO_2E. In addition to the 1990 emissions inventory, CARB also adopted regulations requiring mandatory reporting of GHGs for large facilities that account for 94% of GHG emissions from industrial and commercial stationary sources in California. About 800 separate sources fall under the new reporting rules and include electricity generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and other industrial sources that emit CO_2 in excess of specified thresholds.

On December 11, 2008, CARB approved the *Climate Change Proposed Scoping Plan: A Framework for Change* (Scoping Plan; CARB 2008) to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and Climate Action Team early actions and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program.

The key elements of the Scoping Plan include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
- Achieving a statewide renewables energy mix of 33%
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets

- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State of California's long term commitment to AB 32 implementation.

The First Update to the Climate Change Scoping Plan (Scoping Plan Update) was approved by the CARB Board on May 22, 2014. The Scoping Plan Update builds upon the initial Scoping Plan with new strategies and recommendations. The update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The update defines CARB's climate change priorities for the next five years and sets the groundwork to reach California's long-term climate goals set forth in Executive Orders S-3-05 and B-16-2012. The update highlights California's progress toward meeting the near-term 2020 GHG emission reduction goals defined in the initial Scoping Plan. These efforts were pursued to achieve the near-term 2020 goal and have created a framework for ongoing climate action that can be built upon to maintain and continue economic sector-specific reductions beyond 2020, as required by AB 32. The Scoping Plan Update identifies nine key focus areas or sectors (energy, transportation, agriculture, water, waste management, and natural and working lands), along with short-lived climate pollutants, green buildings, and the cap-and-trade program (CARB 2014d). The update also recommends that a statewide mid-term target and mid-term and long-term sector targets be established toward meeting the 2050 goal established by Executive Order S-3-05 to reduce California's GHG emissions to 80% below 1990 levels, although no specific recommendations are made.

Executive Order S-14-08. On November 17, 2008, Governor Schwarzenegger issued Executive Order S-14-08. This Executive Order focuses on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. The governor's order requires that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the order directs state agencies to take appropriate actions to facilitate reaching this target. The Resources Agency, through collaboration with the CEC and California Department of Fish and Wildlife (CDFW; formerly California Department of Fish and Game), is directed to lead this effort. Pursuant to a Memorandum of Understanding between the CEC and CDFW creating the Renewable Energy Action Team, these agencies will create a "one-stop" process for permitting renewable energy power plants.

Executive Order S-21-09. On September 15, 2009, Governor Schwarzenegger issued Executive Order S-21-09. This Executive Order directed CARB to adopt a regulation consistent with the goal of Executive Order S-14-08 by July 31, 2010. CARB is further directed to work with the CPUC and CEC to ensure that the regulation builds upon the Renewable Portfolio Standard (RPS) program and is applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB is to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health and can be developed the most quickly in support of reliable, efficient, cost-effective electricity system operations. On September 23, 2010, CARB adopted regulations to implement a "Renewable Electricity Standard," which would achieve the goal of the Executive Order with the following intermediate and final goals: 20% for 2012–2014, 24% for 2015–2017, 28% for 2018–2019, and 33% for 2020 and beyond. Under the regulation, wind; solar; geothermal; small hydroelectric; biomass; ocean wave, thermal, and tidal; landfill and digester gas; and biodiesel would be considered sources of renewable energy. The regulation would apply to investor-owned utilities and public (municipal) utilities.

SB 1368. In September 2006, Governor Schwarzenegger signed SB 1368, which requires the California Energy Commission (CEC) to develop and adopt regulations for GHG emissions performance standards for the long-term procurement of electricity by local publicly owned utilities. These standards must be consistent with the standards adopted by the California Public Utilities Commission (CPUC). This effort will help protect energy customers from financial risks associated with investments in carbon-intensive generation by allowing new capital investments in power plants whose GHG emissions are as low or lower than new combined-cycle natural gas plants, by requiring imported electricity to meet GHG performance standards in California, and by requiring that the standards be developed and adopted in a public process.

SB X1 2. On April 12, 2011, Governor Jerry Brown signed SB X1 2 in the First Extraordinary Session, which would expand the RPS by establishing a goal of 20% of the total electricity sold to retail customers in California per year, by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current and that meets other specified requirements with respect to its location. In addition to the retail sellers covered by SB 107, SB X1 2 adds local publicly owned electric utilities to the RPS. By January 1, 2012, the CPUC is required to establish the quantity of electricity products from eligible renewable energy resources to be procured by retail sellers in order to achieve targets of 20% by December 31, 2013; 25% by December 31, 2016; and 33% by December 31, 2020. The statute also requires that the governing boards for local publicly owned electric utilities establish the same targets, and the governing boards would be responsible for ensuring compliance with these targets. The CPUC will be responsible for enforcement of the RPS for retail sellers, while the CEC and CARB will enforce the requirements for local publicly owned electric utilities.

AB 900. On September 27, 2011, Governor Jerry Brown signed AB 900, the "Jobs and Economic Improvement Through Environmental Leadership Act." Under AB 900, specific projects may be qualified for expedited and streamlined environmental review under CEQA. As stated in Section 21183, a project that is identified as an "environmental leadership project" under AB 900 may be certified for streamlining if the project applicant invests $100,000,000 in the State of California following construction, creates high-wage jobs, would not result in any net additional GHG emissions from employee transportation, and mitigation measures identified under environmental review become conditions of approval for the project, among others.

California Air Pollution Control Officers Association. The California Air Pollution Control Officers Association is the association of Air Pollution Control Officers representing all 35 air quality agencies throughout California. The California Air Pollution Control Officers Association is not a regulatory body, but has been an active organization in providing guidance in addressing the CEQA significance of GHG emissions and climate change as well as other air quality issues.

~~6.3 Local Regulations~~

~~**County of San Diego Climate Action Plan.** The County of San Diego Climate Action Plan (CAP), adopted June 2012, documents the County's long-term strategy for addressing the adverse effects of climate change (County of San Diego 2012). The CAP outlines various mechanisms and measures for reducing GHG emissions at the County level, including those specific to water conservation, waste reduction, land use, and adaptation strategies to fulfill the obligations delineated in AB 32. The CAP includes County goals previously established under the County General Plan and County Strategic Energy Plan, and establishes GHG reduction targets at 15% below 2005 levels by 2020, and 49% below 2005 levels by 2035. The CAP builds on long-standing efforts, including state initiatives, County staff recommendations, and regional planning strategies to enhance environmental sustainability and carbon neutrality, particularly unincorporated segments of the County. GHG Sources in San Diego County, unincorporated San Diego County emitted approximately 4.51 MMT CO_2E of GHGs in 2005. Similar to the statewide emissions inventory, the transportation sector was the largest contributor to GHG emissions in 2005 accounting for approximately 59% of total GHG emissions (more than 2.6 MMT CO_2E) (County of San Diego 2012).~~

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7 SIGNIFICANCE CRITERIA AND ANALYSIS METHODOLOGIES

7.1 Methodology and Assumptions

GHG impacts associated with the Proposed Project are related to emissions from short-term construction and long-term operations. Construction may generate GHG emissions as a result of construction equipment emissions and emissions from vehicles driven to/from the Proposed Project site by construction workers and material and water delivery trucks. Operational emissions would result primarily from maintenance personnel vehicle use (i.e., mobile sources).

Emissions from the construction phase of the Proposed Project were estimated using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2, available online (http://www.caleemod.com/).

The equipment mix anticipated for construction activity was based on information provided by the applicant and best engineering judgment and the information provided in Table 1-3 in Section 1.0 Project Description. The equipment mix is meant to represent a reasonably conservative estimate of construction activity.

To determine the maximum annual emissions that would occur during construction, all phases of construction were analyzed to account for maximum number of worker vehicle trips, water delivery trips, material delivery trips; and construction equipment fleet operation that would be occurring simultaneously during each construction phase. These estimates were inputted into the CalEEMod air quality model and the most intense construction activities that would occur was analyzed, reported and compared against the County of San Diego 900 MT screening threshold to determine the level of significance. Operational activities were then inputted into the model, including maintenance and personnel activity that would occur on a worst-case scenario, to determine GHG emissions during operation. Construction emissions would amortized over a 30 year “project life” as recommended in the County’s Interim guidance (County of San Diego 2010) and added to the operational emissions.

Regarding carbon sequestration, there is currently not a complete understanding of the mechanism by which carbon dioxide is taken up by desert soils and flora. It has not been confirmed that the temporary disruption of desert soils during construction of a project would release carbon dioxide or eliminate or reduce the potential carbon sequestration capacity of desert soils, and if it did occur, the mechanism by which it would occur (i.e., inorganic or biological uptake).

With respect to carbon sequestration of chaparral, there is no universally accepted methodology for evaluating this issue in CEQA documents and more specifically for chaparral (as contrasted with forests, the loss of which is identified as a potentially significant impact in Appendix G of the CEQA Guidelines). No significance thresholds or other criteria have been established for evaluating loss of carbon sequestration resulting from removal of vegetation on a Proposed Project site.

Moreover, the chaparral communities of San Diego have burned routinely over many years. The fact that the chaparral in the Proposed Project area has not burned in several decades does not mean that it is not likely to burn at some time in the future, especially when considering the high fire seasons San Diego County has experienced in the recent past and overly arid conditions. When it does burn, the sequestered carbon in the biomass will be released as carbon dioxide (CO_2), which is a GHG. Thus, even if the Proposed Project were not implemented, there would still be a likely release of CO_2 to the atmosphere. Eventually, the burned areas will recover and recovering chaparral will again sequester carbon. Thus, the carbon cycle in the chaparral community is a complex issue, which may be beyond the scope of a CEQA analysis.

Lastly, the Proposed Project would preserve 184 acres of open space which would protect a substantial area of desert soils and flora from disturbance.

The GHG technical report (Appendix 3.1.3-1) was utilized to complete this section. The analysis in this report utilized a methodology for estimating construction and operational emissions for the Proposed Project that has been reviewed and approved by the County of San Diego.

~~6.4~~7.2 State of California

The State of California has developed guidelines to address the significance of climate change impacts based on Appendix G of the CEQA Guidelines, which provides guidance that a project would have a significant environmental impact if it would:

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

Neither the State of California nor the SDAPCD has adopted emission-based thresholds for GHG emissions under CEQA. OPR's Technical Advisory titled *CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review* states that "public agencies are encouraged but not required to adopt thresholds of significance for environmental impacts. Even in the absence of clearly defined thresholds for GHG emissions, the law requires that such emissions from CEQA projects must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact" (OPR 2008). Furthermore, the advisory document indicates that "in the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a 'significant impact,' individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice."

~~6.5~~7.3 County Climate Change Analysis Criteria

The Proposed Project was analyzed under the County of San Diego's "Interim Approach to Addressing Climate Change in CEQA Documents" (May 2010) which is based on the California Air Pollution Control Officers Association (CAPCOA) guidance screening threshold of 900 metric tons (MT) CO_2E per year (County of San Diego 2010). A project that exceeds the 900 MT CO_2E per year screening threshold would be required to conducted a more detailed GHG analysis. The 900 MT threshold for determining when a more detailed climate change analysis is required was chosen based on available guidance from the California Air Pollution Control Officers Association (CAPCOA) white paper on addressing GHG emissions under CEQA (CAPCOA 2008). The CAPCOA white paper references a 900 MT guideline as a conservative threshold for requiring further analysis and mitigation. If a project does not exceed 900 $MTCO_2E$ per year, then the climate change impacts would be considered less than significant.

For a project whose emissions exceed the screening threshold, however, the Interim Approach indicates that the project needs to demonstrate that it would not impede the implementation of the Global Warming Solutions Act of 2006 (AB 32). The Interim Approach states that to demonstrate that a project would not impede the implementation of AB 32, the project should demonstrate how its overall GHG emissions would be reduced to 33% below projected Business As Usual (BAU). The 33% reduction should be an overall reduction for operational emissions, construction-related emissions, and vehicular-related GHG emissions (County of San Diego 2010). Construction emissions are to be annualized over the expected life of the project and added to the operational emissions (County of San Diego 2010)~~The Proposed Project was analyzed under the updated County of San Diego *Guidelines for Determining Significance – Climate Change* which includes a "bright line" screening threshold of 2,500 metric tons CO_2E per year. The County developed screening criteria for a range of project types and sizes to identify smaller projects that would have less-than-cumulatively considerable GHG emissions effects. If a proposed project is the same type and equal to, or smaller than the project size listed, it is presumed that the operational GHG emissions for that project would not exceed 2,500 MT~~

~~CO_2E per year, and there would be a less-than-cumulatively considerable impact (County of San Diego 2013). Use of the 2,500 metric ton "bright line" threshold only applies to a project's operational emissions and does not require construction emissions be annualized and added to the operational emissions~~.

~~7~~8 PROJECT IMPACT ANALYSIS

The significance criteria described in Section 7.0 were used to evaluate impacts associated with the construction and operation of the Proposed Project.

~~7.1~~8.1 Significance of Impacts Prior to Mitigation

Construction is anticipated to commence in May 2016 and would require approximately 6 months to complete. Details of the construction schedule including heavy construction equipment hours of operation and duration, worker trips, and equipment mix are included in Appendix A.

The equipment mix anticipated for construction activity was based on information provided by the applicant and best engineering judgment. The equipment mix is meant to represent a reasonably conservative estimate of construction activity.

~~7.2~~8.2 Construction GHG Emissions

GHG emissions would be associated with construction of the Proposed Project through use of construction equipment and vehicle trips. Emissions of CO_2 from off-road equipment used the construction phase of the Proposed Project were estimated using CalEEMod (available online at http://www.caleemod.com/).

The Proposed Project is anticipated to commence construction in May 2016 and would be completed within approximately 6 months. Details of the construction schedule, including heavy construction equipment hours of operation and duration, worker trips, and equipment mix, are included in Appendix A. Proposed construction phases and associated durations, which overlap, include the following:

- Mobilization and Site preparation (2 weeks)
- Clear and Grub/Grading/Roads (6 weeks)
- Underground electrical (16 weeks)
- PV Racks and Solar Panel Installation 16 weeks)
- Substation construction (7 weeks)
- Gen-tie construction (4 weeks)

The equipment mix anticipated for construction activity was based on information provided by the applicant and best engineering judgment. The equipment mix is meant to represent a reasonably conservative estimate of construction activity.

GHG emissions would be associated with the construction of the Proposed Project through use of construction equipment, construction crew vehicle trips, and materials or components deliveries, including those for water delivery.

In accordance with the County of San Diego's Interim Approach ~~*Guidelines for Determining Significance – Climate Change*~~, the Proposed Project is analyzed under a ~~2,500~~900 metric ton CO_2E per year ~~"bright line"~~ screening threshold. ~~As stated in the County guidance, "construction-related emissions do not need to be separately analyzed and included as part of the assessment of project against the Bright Line Threshold" (County of San Diego 2013). As such, construction emissions are quantified and provided for disclosure and information purposes only.~~Construction emission are amortized over the long-term life of the project (which is estimated to be approximately 30 years for the Proposed Project) and added to the operational emissions, per the County's Recommended Approach guidance (County of San Diego 2010).

Table 14, Estimated Construction GHG Emissions, shows the estimated annual GHG construction emissions associated with the Proposed Project in the year 2016.

Table 14
Estimated Construction GHG Emissions (metric tons/year)

Construction Year	CO_2E Emissions
2016	~~1,232~~2,175
Amortized Construction Emissions	73

Source: See Appendix A for complete results.

~~7.3~~8.3 Operational GHG Emissions

The following section discusses the calculations of GHG emissions resulting from the primary sources of GHGs associated with the operation of the Proposed Project. Operation of the Proposed Project would produce GHG emissions associated with employee vehicles, washing vehicles (heavy-duty diesel water trucks), and water supply during operation and maintenance of the Project. GHG emissions from natural gas use and creation of solid waste are not associated with the Proposed Project. Electricity consumption for Project operations is anticipated to be minimal.

~~7.3.1~~8.3.1 Motor Vehicles

The Proposed Project would impact air quality through the vehicular traffic generated by operations and maintenance vehicles including employee vehicles and washing vehicles. As summarized in Table 15, Estimated Operational GHG Emissions, total annual operational GHG emissions from motor vehicles would be approximately ~~113.80~~108 metric tons CO_2E per year. Additional detail regarding these calculations can be found in Appendix A.

7.3.28.3.2 Water Supply

Water for operational activities would include approximately 800,000 gallons per year for PV module washing and, 280,000 gallons per year for application of soil binding agents (if required), and 65,000 gallons per year for potable water needs. As shown in Table 16, annual water use would result in approximately 4.29 metric tons CO_2E per year (see Appendix A).

8.3.3 Decommissioning

Decommissioning activities would be expected to result in substantially lower air quality emissions compared to construction activities due to more stringent engine and motor vehicle standards, including Best Available Control Technology (BACT), at the time of decommissioning. Additionally, major pollutant generating activities would not occur or would be greatly reduced during decommissioning activities. These activities include clearing, grubbing and grading activities; gen-tie construction; intensive water importation and distribution on site associated with earth moving, site preparation, grading, and concrete mixing; and undergrounding of utility cables. As such, the maximum daily construction emissions estimated for the Proposed Project would represent the maximum daily emissions that would occur during any phase of the Proposed Project life, including construction, operation and decommissioning. However, for the purposes of a conservative analysis, it was assumed that decommissioning emissions would equate to emissions estimated for the Proposed Project construction activities. This results in approximately 2,175 MT CO_2E for decommissioning amortized over the life of the project for annual GHG emissions of 73 MT CO_2E.

7.3.38.3.4 Summary of GHG Emissions

As shown in Table 15, total annual GHG emissions from construction and operation of the Proposed Project would be approximately 118 258 metric tons CO_2E per year.

Table 15
Estimated Operational GHG Emissions (metric tons/year)

Source	CO_2E Emissions
Motor Vehicles	113.80108
Water Supply	4.17
Amortized Construction Emissions	73
Amortized Decommissioning Mitigation Emissions	73
Total	**258117.98**

Source: See Appendix A for complete results.

Because the total Project GHG emissions would not exceed the County's screening threshold of 2,500900 metric tons CO_2E per year as delineated in the County's Interim Approach guidance *Guidelines for Determining Significant – Climate Change* (County of San Diego 20132010), impacts would be considered **less than significant**.

Once operational, the Proposed Project's construction impacts would eventually be offset following completion of construction activities resulting in a net beneficial impact, if the renewable source of energy could displace electricity generated by fossil-fuel-fired power plants. For the purposes of this analysis, it was assumed the project would generate approximately 2,000 kilowatt-hours alternating current annually per installed kilowatt (based on the direct current capacity of CPV trackers). This factor reflects the available daylight hours, conversion of direct current to alternating current, and various system losses. Using the installed CPV capacity of 28 MW (28,000 kilowatts) direct current, the project is anticipated to generate approximately 56,000,000 kilowatt-hours (kWh) per year. The proposed project would provide a potential reduction of 27,333 metric tons CO_2E per year if the electricity generated by the proposed project were to be used instead of electricity generated by fossil-fuel sources. After accounting for the annualized construction and annual operational emissions of 258 metric tons CO_2E per year, the net reduction in GHG emissions would be 27,075 metric tons CO_2E per year. This reduction is *not* considered in the significance determination of the proposed project's GHG emissions but is provided for disclosure purposes only. See Appendix A, for details.

7.48.4 Project Design Features and Mitigation Measures

No mitigation measures would be required.

7.58.5 Conclusion

The Proposed Project's potential effect on global climate change was evaluated, and GHG emissions were estimated. The Proposed Project is estimated to result in total construction emissions of approximately 1,2322,175 metric tons CO_2E and annual operational GHG emissions of approximately 118 258 metric tons CO_2E per year. As such, the Proposed Project's operational emissions would not exceed the County's screening threshold of 2,500900 metric tons CO_2E per year as delineated in the County's Interim Approach guidance (County of San Diego 2010)*Guidelines for Determining Significant – Climate Change* (County of San Diego 2013). In fact, the Proposed Project would provide more renewable energy in keeping with Measure No. E-3 of the Climate Change Scoping Plan, which calls for a 33% renewables mix by 2020. The Proposed Project would therefore have a less-than-significant impact on climate change.

~~8~~9 SUMMARY OF RECOMMENDED PROJECT DESIGN FEATURES, IMPACTS, AND MITIGATION MEASURES

All impacts identified under the proposed Jacumba Solar Project relate to air quality and global climate change would be **less than significant**. No mitigation measures would be required.

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APPENDIX A

Criteria Pollutant and Greenhouse Gas Emission Estimates

Jacumba Solar Project

San Diego Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	108.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2016
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Construction Phase - soil import added

Off-road Equipment - no equipment for import phase

Trips and VMT - updated per comments

Grading - 6,300 cy import

Vehicle Trips - max 20 trips per day

Water And Wastewater - water use = 1,080,000 gal/yr

Construction Off-road Equipment Mitigation - water area 3x per day

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	18.1043	246.4191	150.5223	0.4196	36.7817	8.1945	44.9763	16.2861	7.5388	23.8249	0.0000	42,365.4615	42,365.4615	4.3879	0.0000	42,457.6070
Total	**18.1043**	**246.4191**	**150.5223**	**0.4196**	**36.7817**	**8.1945**	**44.9763**	**16.2861**	**7.5388**	**23.8249**	**0.0000**	**42,365.4615**	**42,365.4615**	**4.3879**	**0.0000**	**42,457.6070**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	18.1043	246.4191	150.5223	0.4196	20.2826	8.1945	28.4771	8.0136	7.5388	15.5524	0.0000	42,365.4615	42,365.4615	4.3879	0.0000	42,457.6070
Total	**18.1043**	**246.4191**	**150.5223**	**0.4196**	**20.2826**	**8.1945**	**28.4771**	**8.0136**	**7.5388**	**15.5524**	**0.0000**	**42,365.4615**	**42,365.4615**	**4.3879**	**0.0000**	**42,457.6070**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**44.86**	**0.00**	**36.68**	**50.79**	**0.00**	**34.72**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.1758	0.7339	2.8512	7.4200e-003	0.5391	9.8800e-003	0.5490	0.1439	9.0800e-003	0.1530		648.2331	648.2331	0.0266		648.7922
Total	**0.1758**	**0.7339**	**2.8513**	**7.4200e-003**	**0.5391**	**9.8800e-003**	**0.5490**	**0.1439**	**9.0800e-003**	**0.1530**		**648.2333**	**648.2333**	**0.0266**	**0.0000**	**648.7925**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.1758	0.7339	2.8512	7.4200e-003	0.5391	9.8800e-003	0.5490	0.1439	9.0800e-003	0.1530		648.2331	648.2331	0.0266		648.7922
Total	**0.1758**	**0.7339**	**2.8513**	**7.4200e-003**	**0.5391**	**9.8800e-003**	**0.5490**	**0.1439**	**9.0800e-003**	**0.1530**		**648.2333**	**648.2333**	**0.0266**	**0.0000**	**648.7925**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/1/2016	5/14/2016	6	12	
2	Grading	Grading	5/15/2016	6/29/2016	6	39	
3	Grading - Soil Import	Grading	5/15/2016	6/29/2016	6	39	
4	Underground Electrical	Trenching	6/30/2016	10/20/2016	6	97	
5	PV Racks and Solar Panel Installation	Building Construction	6/30/2016	10/20/2016	6	97	
6	Substation Construction	Building Construction	8/1/2016	9/19/2016	6	43	
7	Gen-Tie Construction	Building Construction	9/5/2016	10/1/2016	6	24	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 108

Acres of Paving: 0

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

OffRoad Equipment

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	4	10.00	44.00	192.00	60.00	68.00	85.00	LD_Mix	HDT_Mix	HHDT
Grading	12	30.00	104.00	624.00	60.00	68.00	85.00	LD_Mix	HDT_Mix	HHDT
Grading - Soil Import	0	0.00	0.00	630.00	0.00	0.00	55.00	LD_Mix	HDT_Mix	HHDT
Underground Electrical	4	126.00	10.00	776.00	60.00	68.00	85.00	LD_Mix	HDT_Mix	HHDT
PV Racks and Solar Panel Installation	14	126.00	10.00	776.00	60.00	68.00	85.00	LD_Mix	HDT_Mix	HHDT
Substation Construction	4	0.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
Gen-Tie Construction	10	0.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.0442	0.0000	12.0442	6.6205	0.0000	6.6205			0.0000			0.0000
Off-Road	3.2529	36.6030	27.8267	0.0283		1.7268	1.7268		1.5887	1.5887		2,946.7003	2,946.7003	0.8888		2,965.3657
Total	**3.2529**	**36.6030**	**27.8267**	**0.0283**	**12.0442**	**1.7268**	**13.7710**	**6.6205**	**1.5887**	**8.2091**		**2,946.7003**	**2,946.7003**	**0.8888**		**2,965.3657**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.9193	18.4962	7.5662	0.0498	1.1838	0.2579	1.4417	0.3240	0.2372	0.5613		5,027.5313	5,027.5313	0.0340		5,028.2445
Vendor	1.8722	32.2111	14.8851	0.0904	2.7115	0.5659	3.2774	0.7726	0.5206	1.2933		9,112.2082	9,112.2082	0.0633		9,113.5382
Worker	0.0841	0.2300	2.0190	5.3000e-003	0.4559	3.0700e-003	0.4590	0.1209	2.8200e-003	0.1237		442.6289	442.6289	0.0225		443.1011
Total	**2.8756**	**50.9372**	**24.4704**	**0.1455**	**4.3512**	**0.8269**	**5.1780**	**1.2175**	**0.7607**	**1.9782**		**14,582.3683**	**14,582.3683**	**0.1198**		**14,584.8837**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.6972	0.0000	4.6972	2.5820	0.0000	2.5820			0.0000			0.0000
Off-Road	3.2529	36.6030	27.8267	0.0283		1.7268	1.7268		1.5887	1.5887	0.0000	2,946.7003	2,946.7003	0.8888		2,965.3657
Total	**3.2529**	**36.6030**	**27.8267**	**0.0283**	**4.6972**	**1.7268**	**6.4241**	**2.5820**	**1.5887**	**4.1707**	**0.0000**	**2,946.7003**	**2,946.7003**	**0.8888**		**2,965.3657**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.9193	18.4962	7.5662	0.0498	1.1838	0.2579	1.4417	0.3240	0.2372	0.5613		5,027.5313	5,027.5313	0.0340		5,028.2445
Vendor	1.8722	32.2111	14.8851	0.0904	2.7115	0.5659	3.2774	0.7726	0.5206	1.2933		9,112.2082	9,112.2082	0.0633		9,113.5382
Worker	0.0841	0.2300	2.0190	5.3000e-003	0.4559	3.0700e-003	0.4590	0.1209	2.8200e-003	0.1237		442.6289	442.6289	0.0225		443.1011
Total	**2.8756**	**50.9372**	**24.4704**	**0.1455**	**4.3512**	**0.8269**	**5.1780**	**1.2175**	**0.7607**	**1.9782**		**14,582.3683**	**14,582.3683**	**0.1198**		**14,584.8837**

3.3 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					27.0251	0.0000	27.0251	13.5580	0.0000	13.5580			0.0000			0.0000

Off-Road	11.8452	138.8857	95.6759	0.1075		6.4210	6.4210		5.9073	5.9073		11,178.3393	11,178.3393	3.3718		11,249.1468
Total	**11.8452**	**138.8857**	**95.6759**	**0.1075**	**27.0251**	**6.4210**	**33.4461**	**13.5580**	**5.9073**	**19.4653**		**11,178.3393**	**11,178.3393**	**3.3718**		**11,249.1468**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.9193	18.4962	7.5662	0.0498	1.1838	0.2579	1.4417	0.3240	0.2372	0.5613		5,027.5313	5,027.5313	0.0340		5,028.2445
Vendor	4.4251	76.1353	35.1830	0.2137	6.4089	1.3377	7.7466	1.8262	1.2306	3.0568		21,537.9465	21,537.9465	0.1497		21,541.0903
Worker	0.2523	0.6899	6.0571	0.0159	1.3678	9.2000e-003	1.3770	0.3626	8.4600e-003	0.3711		1,327.8866	1,327.8866	0.0675		1,329.3032
Total	**5.5967**	**95.3214**	**48.8063**	**0.2794**	**8.9605**	**1.6047**	**10.5652**	**2.5129**	**1.4763**	**3.9891**		**27,893.3644**	**27,893.3644**	**0.2511**		**27,898.6379**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					10.5398	0.0000	10.5398	5.2876	0.0000	5.2876			0.0000			0.0000
Off-Road	11.8452	138.8857	95.6759	0.1075		6.4210	6.4210		5.9073	5.9073	0.0000	11,178.3393	11,178.3393	3.3718		11,249.1468
Total	**11.8452**	**138.8857**	**95.6759**	**0.1075**	**10.5398**	**6.4210**	**16.9607**	**5.2876**	**5.9073**	**11.1949**	**0.0000**	**11,178.3393**	**11,178.3393**	**3.3718**		**11,249.1468**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.9193	18.4962	7.5662	0.0498	1.1838	0.2579	1.4417	0.3240	0.2372	0.5613		5,027.5313	5,027.5313	0.0340		5,028.2445
Vendor	4.4251	76.1353	35.1830	0.2137	6.4089	1.3377	7.7466	1.8262	1.2306	3.0568		21,537.9465	21,537.9465	0.1497		21,541.0903
Worker	0.2523	0.6899	6.0571	0.0159	1.3678	9.2000e-003	1.3770	0.3626	8.4600e-003	0.3711		1,327.8866	1,327.8866	0.0675		1,329.3032
Total	**5.5967**	**95.3214**	**48.8063**	**0.2794**	**8.9605**	**1.6047**	**10.5652**	**2.5129**	**1.4763**	**3.9891**		**27,893.3644**	**27,893.3644**	**0.2511**		**27,898.6379**

3.4 Grading - Soil Import - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0227	0.0000	0.0227	3.4400e-003	0.0000	3.4400e-003			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0227**	**0.0000**	**0.0227**	**3.4400e-003**	**0.0000**	**3.4400e-003**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.6624	12.2120	6.0401	0.0326	0.7735	0.1688	0.9423	0.2117	0.1553	0.3670		3,293.7578	3,293.7578	0.0225		3,294.2306
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.6624**	**12.2120**	**6.0401**	**0.0326**	**0.7735**	**0.1688**	**0.9423**	**0.2117**	**0.1553**	**0.3670**		**3,293.7578**	**3,293.7578**	**0.0225**		**3,294.2306**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.8500e-003	0.0000	8.8500e-003	1.3400e-003	0.0000	1.3400e-003			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**8.8500e-003**	**0.0000**	**8.8500e-003**	**1.3400e-003**	**0.0000**	**1.3400e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6624	12.2120	6.0401	0.0326	0.7735	0.1688	0.9423	0.2117	0.1553	0.3670		3,293.7578	3,293.7578	0.0225		3,294.2306
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.6624**	**12.2120**	**6.0401**	**0.0326**	**0.7735**	**0.1688**	**0.9423**	**0.2117**	**0.1553**	**0.3670**		**3,293.7578**	**3,293.7578**	**0.0225**		**3,294.2306**

3.5 Underground Electrical - 2016

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	1.5776	14.6345	10.0515	0.0128		1.1338	1.1338		1.0431	1.0431		1,330.7576	1,330.7576	0.4014		1,339.1871
Total	**1.5776**	**14.6345**	**10.0515**	**0.0128**		**1.1338**	**1.1338**		**1.0431**	**1.0431**		**1,330.7576**	**1,330.7576**	**0.4014**		**1,339.1871**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.4597	9.2481	3.7831	0.0249	0.5919	0.1289	0.7208	0.1620	0.1186	0.2806		2,513.7657	2,513.7657	0.0170		2,514.1222
Vendor	0.4255	7.3207	3.3830	0.0206	0.6162	0.1286	0.7449	0.1756	0.1183	0.2939		2,070.9564	2,070.9564	0.0144		2,071.2587
Worker	1.0595	2.8974	25.4398	0.0668	5.7447	0.0386	5.7833	1.5230	0.0355	1.5585		5,577.1235	5,577.1235	0.2833		5,583.0734
Total	**1.9446**	**19.4662**	**32.6059**	**0.1122**	**6.9528**	**0.2962**	**7.2490**	**1.8606**	**0.2725**	**2.1331**		**10,161.8456**	**10,161.8456**	**0.3147**		**10,168.4543**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5776	14.6345	10.0515	0.0128		1.1338	1.1338		1.0431	1.0431	0.0000	1,330.7576	1,330.7576	0.4014		1,339.1871
Total	**1.5776**	**14.6345**	**10.0515**	**0.0128**		**1.1338**	**1.1338**		**1.0431**	**1.0431**	**0.0000**	**1,330.7576**	**1,330.7576**	**0.4014**		**1,339.1871**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4597	9.2481	3.7831	0.0249	0.5919	0.1289	0.7208	0.1620	0.1186	0.2806		2,513.7657	2,513.7657	0.0170		2,514.1222
Vendor	0.4255	7.3207	3.3830	0.0206	0.6162	0.1286	0.7449	0.1756	0.1183	0.2939		2,070.9564	2,070.9564	0.0144		2,071.2587
Worker	1.0595	2.8974	25.4398	0.0668	5.7447	0.0386	5.7833	1.5230	0.0355	1.5585		5,577.1235	5,577.1235	0.2833		5,583.0734
Total	**1.9446**	**19.4662**	**32.6059**	**0.1122**	**6.9528**	**0.2962**	**7.2490**	**1.8606**	**0.2725**	**2.1331**		**10,161.8456**	**10,161.8456**	**0.3147**		**10,168.4543**

3.6 PV Racks and Solar Panel Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.4248	50.5408	28.0322	0.0666		2.6136	2.6136		2.5072	2.5072		6,654.8292	6,654.8292	1.6238		6,688.9282

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Total	**5.4248**	**50.5408**	**28.0322**	**0.0666**		**2.6136**	**2.6136**		**2.5072**	**2.5072**		**6,654.8292**	**6,654.8292**	**1.6238**		**6,688.9282**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4597	9.2481	3.7831	0.0249	0.5919	0.1289	0.7208	0.1620	0.1186	0.2806		2,513.7657	2,513.7657	0.0170		2,514.1222
Vendor	0.4255	7.3207	3.3830	0.0206	0.6162	0.1286	0.7449	0.1756	0.1183	0.2939		2,070.9564	2,070.9564	0.0144		2,071.2587
Worker	1.0595	2.8974	25.4398	0.0668	5.7447	0.0386	5.7833	1.5230	0.0355	1.5585		5,577.1235	5,577.1235	0.2833		5,583.0734
Total	**1.9446**	**19.4662**	**32.6059**	**0.1122**	**6.9528**	**0.2962**	**7.2490**	**1.8606**	**0.2725**	**2.1331**		**10,161.8456**	**10,161.8456**	**0.3147**		**10,168.4543**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.4248	50.5408	28.0322	0.0666		2.6136	2.6136		2.5072	2.5072	0.0000	6,654.8292	6,654.8292	1.6238		6,688.9282
Total	**5.4248**	**50.5408**	**28.0322**	**0.0666**		**2.6136**	**2.6136**		**2.5072**	**2.5072**	**0.0000**	**6,654.8292**	**6,654.8292**	**1.6238**		**6,688.9282**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4597	9.2481	3.7831	0.0249	0.5919	0.1289	0.7208	0.1620	0.1186	0.2806		2,513.7657	2,513.7657	0.0170		2,514.1222
Vendor	0.4255	7.3207	3.3830	0.0206	0.6162	0.1286	0.7449	0.1756	0.1183	0.2939		2,070.9564	2,070.9564	0.0144		2,071.2587
Worker	1.0595	2.8974	25.4398	0.0668	5.7447	0.0386	5.7833	1.5230	0.0355	1.5585		5,577.1235	5,577.1235	0.2833		5,583.0734
Total	**1.9446**	**19.4662**	**32.6059**	**0.1122**	**6.9528**	**0.2962**	**7.2490**	**1.8606**	**0.2725**	**2.1331**		**10,161.8456**	**10,161.8456**	**0.3147**		**10,168.4543**

3.7 Substation Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3913	15.8384	8.7614	0.0141		0.8064	0.8064		0.7419	0.7419		1,466.4717	1,466.4717	0.4423		1,475.7609
Total	**1.3913**	**15.8384**	**8.7614**	**0.0141**		**0.8064**	**0.8064**		**0.7419**	**0.7419**		**1,466.4717**	**1,466.4717**	**0.4423**		**1,475.7609**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3913	15.8384	8.7614	0.0141		0.8064	0.8064		0.7419	0.7419	0.0000	1,466.4717	1,466.4717	0.4423		1,475.7608
Total	**1.3913**	**15.8384**	**8.7614**	**0.0141**		**0.8064**	**0.8064**		**0.7419**	**0.7419**	**0.0000**	**1,466.4717**	**1,466.4717**	**0.4423**		**1,475.7608**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.8 Gen-Tie Construction - 2016

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	2.7111	32.7896	20.0443	0.0412		1.5774	1.5774		1.4512	1.4512		4,279.9056	4,279.9056	1.2910		4,307.0160
Total	**2.7111**	**32.7896**	**20.0443**	**0.0412**		**1.5774**	**1.5774**		**1.4512**	**1.4512**		**4,279.9056**	**4,279.9056**	**1.2910**		**4,307.0160**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7111	32.7896	20.0443	0.0412		1.5774	1.5774		1.4512	1.4512	0.0000	4,279.9056	4,279.9056	1.2910		4,307.0160
Total	**2.7111**	**32.7896**	**20.0443**	**0.0412**		**1.5774**	**1.5774**		**1.4512**	**1.4512**	**0.0000**	**4,279.9056**	**4,279.9056**	**1.2910**		**4,307.0160**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Mitigated	0.1758	0.7339	2.8512	7.4200e-003	0.5391	9.8800e-003	0.5490	0.1439	9.0800e-003	0.1530		648.2331	648.2331	0.0266		648.7922
Unmitigated	0.1758	0.7339	2.8512	7.4200e-003	0.5391	9.8800e-003	0.5490	0.1439	9.0800e-003	0.1530		648.2331	648.2331	0.0266		648.7922

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	20.00	20.00	20.00	254,800	254,800
Total	20.00	20.00	20.00	254,800	254,800

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	14.70	6.60	6.60	0.00	0.00	0.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.510118	0.073510	0.192396	0.133166	0.036737	0.005265	0.012605	0.021642	0.001847	0.002083	0.006548	0.000610	0.003471

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

SubCategory	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	lb/day										lb/day					
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Vegetation

CalEEMod Version: CalEEMod.2013.2.2

Jacumba Solar Project

San Diego Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	108.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2016
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Construction Phase - soil import added

Off-road Equipment - no equipment for import phase

Trips and VMT - updated per comments

Grading - 6,300 cy import

Vehicle Trips - max 20 trips per day

Water And Wastewater - water use = 1,080,000 gal/yr

Construction Off-road Equipment Mitigation - water area 3x per day

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	17.8751	242.7891	145.4228	0.4208	36.7817	8.1926	44.9744	16.2861	7.5371	23.8231	0.0000	42,477.6073	42,477.6073	4.3877	0.0000	42,569.7484
Total	**17.8751**	**242.7891**	**145.4228**	**0.4208**	**36.7817**	**8.1926**	**44.9744**	**16.2861**	**7.5371**	**23.8231**	**0.0000**	**42,477.6073**	**42,477.6073**	**4.3877**	**0.0000**	**42,569.7484**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	17.8751	242.7891	145.4228	0.4208	20.2826	8.1926	28.4752	8.0136	7.5371	15.5507	0.0000	42,477.6073	42,477.6073	4.3877	0.0000	42,569.7484
Total	**17.8751**	**242.7891**	**145.4228**	**0.4208**	**20.2826**	**8.1926**	**28.4752**	**8.0136**	**7.5371**	**15.5507**	**0.0000**	**42,477.6073**	**42,477.6073**	**4.3877**	**0.0000**	**42,569.7484**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**44.86**	**0.00**	**36.69**	**50.79**	**0.00**	**34.72**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.1719	0.6886	2.9680	7.8200e-003	0.5391	9.8700e-003	0.5490	0.1439	9.0700e-003	0.1530		681.5534	681.5534	0.0266		682.1125
Total	**0.1719**	**0.6886**	**2.9681**	**7.8200e-003**	**0.5391**	**9.8700e-003**	**0.5490**	**0.1439**	**9.0700e-003**	**0.1530**		**681.5536**	**681.5536**	**0.0266**	**0.0000**	**682.1127**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.1719	0.6886	2.9680	7.8200e-003	0.5391	9.8700e-003	0.5490	0.1439	9.0700e-003	0.1530		681.5534	681.5534	0.0266		682.1125
Total	**0.1719**	**0.6886**	**2.9681**	**7.8200e-003**	**0.5391**	**9.8700e-003**	**0.5490**	**0.1439**	**9.0700e-003**	**0.1530**		**681.5536**	**681.5536**	**0.0266**	**0.0000**	**682.1127**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/1/2016	5/14/2016	6	12	
2	Grading	Grading	5/15/2016	6/29/2016	6	39	
3	Grading - Soil Import	Grading	5/15/2016	6/29/2016	6	39	
4	Underground Electrical	Trenching	6/30/2016	10/20/2016	6	97	
5	PV Racks and Solar Panel Installation	Building Construction	6/30/2016	10/20/2016	6	97	
6	Substation Construction	Building Construction	8/1/2016	9/19/2016	6	43	
7	Gen-Tie Construction	Building Construction	9/5/2016	10/1/2016	6	24	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 108

Acres of Paving: 0

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

<u>OffRoad Equipment</u>

<u>Trips and VMT</u>

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	4	10.00	44.00	192.00	60.00	68.00	85.00	LD_Mix	HDT_Mix	HHDT
Grading	12	30.00	104.00	624.00	60.00	68.00	85.00	LD_Mix	HDT_Mix	HHDT
Grading - Soil Import	0	0.00	0.00	630.00	0.00	0.00	55.00	LD_Mix	HDT_Mix	HHDT
Underground Electrical	4	126.00	10.00	776.00	60.00	68.00	85.00	LD_Mix	HDT_Mix	HHDT
PV Racks and Solar Panel Installation	14	126.00	10.00	776.00	60.00	68.00	85.00	LD_Mix	HDT_Mix	HHDT
Substation Construction	4	0.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
Gen-Tie Construction	10	0.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.0442	0.0000	12.0442	6.6205	0.0000	6.6205			0.0000			0.0000
Off-Road	3.2529	36.6030	27.8267	0.0283		1.7268	1.7268		1.5887	1.5887		2,946.7003	2,946.7003	0.8888		2,965.3657
Total	**3.2529**	**36.6030**	**27.8267**	**0.0283**	**12.0442**	**1.7268**	**13.7710**	**6.6205**	**1.5887**	**8.2091**		**2,946.7003**	**2,946.7003**	**0.8888**		**2,965.3657**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8848	17.8783	6.6622	0.0498	1.1838	0.2577	1.4415	0.3240	0.2371	0.5611		5,030.3595	5,030.3595	0.0339		5,031.0702
Vendor	1.8047	31.1390	13.2643	0.0905	2.7115	0.5653	3.2767	0.7726	0.5200	1.2926		9,120.2568	9,120.2568	0.0631		9,121.5826
Worker	0.0841	0.2051	2.2065	5.6500e-003	0.4559	3.0700e-003	0.4590	0.1209	2.8200e-003	0.1237		471.7749	471.7749	0.0225		472.2471
Total	**2.7736**	**49.2224**	**22.1330**	**0.1459**	**4.3512**	**0.8261**	**5.1772**	**1.2175**	**0.7599**	**1.9775**		**14,622.3912**	**14,622.3912**	**0.1195**		**14,624.8999**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.6972	0.0000	4.6972	2.5820	0.0000	2.5820			0.0000			0.0000
Off-Road	3.2529	36.6030	27.8267	0.0283		1.7268	1.7268		1.5887	1.5887	0.0000	2,946.7003	2,946.7003	0.8888		2,965.3657
Total	**3.2529**	**36.6030**	**27.8267**	**0.0283**	**4.6972**	**1.7268**	**6.4241**	**2.5820**	**1.5887**	**4.1707**	**0.0000**	**2,946.7003**	**2,946.7003**	**0.8888**		**2,965.3657**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8848	17.8783	6.6622	0.0498	1.1838	0.2577	1.4415	0.3240	0.2371	0.5611		5,030.3595	5,030.3595	0.0339		5,031.0702
Vendor	1.8047	31.1390	13.2643	0.0905	2.7115	0.5653	3.2767	0.7726	0.5200	1.2926		9,120.2568	9,120.2568	0.0631		9,121.5826
Worker	0.0841	0.2051	2.2065	5.6500e-003	0.4559	3.0700e-003	0.4590	0.1209	2.8200e-003	0.1237		471.7749	471.7749	0.0225		472.2471
Total	**2.7736**	**49.2224**	**22.1330**	**0.1459**	**4.3512**	**0.8261**	**5.1772**	**1.2175**	**0.7599**	**1.9775**		**14,622.3912**	**14,622.3912**	**0.1195**		**14,624.8999**

3.3 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					27.0251	0.0000	27.0251	13.5580	0.0000	13.5580			0.0000			0.0000

Off-Road	11.8452	138.8857	95.6759	0.1075		6.4210	6.4210		5.9073	5.9073		11,178.3393	11,178.3393	3.3718		11,249.1468
Total	**11.8452**	**138.8857**	**95.6759**	**0.1075**	**27.0251**	**6.4210**	**33.4461**	**13.5580**	**5.9073**	**19.4653**		**11,178.3393**	**11,178.3393**	**3.3718**		**11,249.1468**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8848	17.8783	6.6622	0.0498	1.1838	0.2577	1.4415	0.3240	0.2371	0.5611		5,030.3595	5,030.3595	0.0339		5,031.0702
Vendor	4.2656	73.6012	31.3519	0.2138	6.4089	1.3361	7.7450	1.8262	1.2291	3.0553		21,556.9707	21,556.9707	0.1492		21,560.1043
Worker	0.2523	0.6152	6.6195	0.0170	1.3678	9.2000e-003	1.3770	0.3626	8.4600e-003	0.3711		1,415.3247	1,415.3247	0.0675		1,416.7413
Total	**5.4028**	**92.0947**	**44.6336**	**0.2806**	**8.9605**	**1.6030**	**10.5635**	**2.5129**	**1.4747**	**3.9875**		**28,002.6548**	**28,002.6548**	**0.2505**		**28,007.9158**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					10.5398	0.0000	10.5398	5.2876	0.0000	5.2876			0.0000			0.0000
Off-Road	11.8452	138.8857	95.6759	0.1075		6.4210	6.4210		5.9073	5.9073	0.0000	11,178.3393	11,178.3393	3.3718		11,249.1468
Total	**11.8452**	**138.8857**	**95.6759**	**0.1075**	**10.5398**	**6.4210**	**16.9607**	**5.2876**	**5.9073**	**11.1949**	**0.0000**	**11,178.3393**	**11,178.3393**	**3.3718**		**11,249.1468**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8848	17.8783	6.6622	0.0498	1.1838	0.2577	1.4415	0.3240	0.2371	0.5611		5,030.3595	5,030.3595	0.0339		5,031.0702
Vendor	4.2656	73.6012	31.3519	0.2138	6.4089	1.3361	7.7450	1.8262	1.2291	3.0553		21,556.9707	21,556.9707	0.1492		21,560.1043
Worker	0.2523	0.6152	6.6195	0.0170	1.3678	9.2000e-003	1.3770	0.3626	8.4600e-003	0.3711		1,415.3247	1,415.3247	0.0675		1,416.7413
Total	**5.4028**	**92.0947**	**44.6336**	**0.2806**	**8.9605**	**1.6030**	**10.5635**	**2.5129**	**1.4747**	**3.9875**		**28,002.6548**	**28,002.6548**	**0.2505**		**28,007.9158**

3.4 Grading - Soil Import - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0227	0.0000	0.0227	3.4400e-003	0.0000	3.4400e-003			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0227**	**0.0000**	**0.0227**	**3.4400e-003**	**0.0000**	**3.4400e-003**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.6272	11.8087	5.1133	0.0327	0.7735	0.1687	0.9421	0.2117	0.1551	0.3669		3,296.6132	3,296.6132	0.0224		3,297.0835
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.6272**	**11.8087**	**5.1133**	**0.0327**	**0.7735**	**0.1687**	**0.9421**	**0.2117**	**0.1551**	**0.3669**		**3,296.6132**	**3,296.6132**	**0.0224**		**3,297.0835**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.8500e-003	0.0000	8.8500e-003	1.3400e-003	0.0000	1.3400e-003			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**8.8500e-003**	**0.0000**	**8.8500e-003**	**1.3400e-003**	**0.0000**	**1.3400e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6272	11.8087	5.1133	0.0327	0.7735	0.1687	0.9421	0.2117	0.1551	0.3669		3,296.6132	3,296.6132	0.0224		3,297.0835
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.6272**	**11.8087**	**5.1133**	**0.0327**	**0.7735**	**0.1687**	**0.9421**	**0.2117**	**0.1551**	**0.3669**		**3,296.6132**	**3,296.6132**	**0.0224**		**3,297.0835**

3.5 Underground Electrical - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5776	14.6345	10.0515	0.0128		1.1338	1.1338		1.0431	1.0431		1,330.7576	1,330.7576	0.4014		1,339.1871
Total	**1.5776**	**14.6345**	**10.0515**	**0.0128**		**1.1338**	**1.1338**		**1.0431**	**1.0431**		**1,330.7576**	**1,330.7576**	**0.4014**		**1,339.1871**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4424	8.9392	3.3311	0.0249	0.5919	0.1289	0.7207	0.1620	0.1185	0.2806		2,515.1797	2,515.1797	0.0169		2,515.5351
Vendor	0.4102	7.0770	3.0146	0.0206	0.6162	0.1285	0.7447	0.1756	0.1182	0.2938		2,072.7856	2,072.7856	0.0144		2,073.0870
Worker	1.0596	2.5837	27.8021	0.0712	5.7447	0.0386	5.7833	1.5230	0.0355	1.5585		5,944.3636	5,944.3636	0.2833		5,950.3135
Total	**1.9122**	**18.5999**	**34.1478**	**0.1167**	**6.9528**	**0.2960**	**7.2488**	**1.8606**	**0.2722**	**2.1329**		**10,532.3290**	**10,532.3290**	**0.3146**		**10,538.9356**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5776	14.6345	10.0515	0.0128		1.1338	1.1338		1.0431	1.0431	0.0000	1,330.7576	1,330.7576	0.4014		1,339.1871
Total	**1.5776**	**14.6345**	**10.0515**	**0.0128**		**1.1338**	**1.1338**		**1.0431**	**1.0431**	**0.0000**	**1,330.7576**	**1,330.7576**	**0.4014**		**1,339.1871**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4424	8.9392	3.3311	0.0249	0.5919	0.1289	0.7207	0.1620	0.1185	0.2806		2,515.1797	2,515.1797	0.0169		2,515.5351
Vendor	0.4102	7.0770	3.0146	0.0206	0.6162	0.1285	0.7447	0.1756	0.1182	0.2938		2,072.7856	2,072.7856	0.0144		2,073.0870
Worker	1.0596	2.5837	27.8021	0.0712	5.7447	0.0386	5.7833	1.5230	0.0355	1.5585		5,944.3636	5,944.3636	0.2833		5,950.3135
Total	**1.9122**	**18.5999**	**34.1478**	**0.1167**	**6.9528**	**0.2960**	**7.2488**	**1.8606**	**0.2722**	**2.1329**		**10,532.3290**	**10,532.3290**	**0.3146**		**10,538.9356**

3.6 PV Racks and Solar Panel Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.4248	50.5408	28.0322	0.0666		2.6136	2.6136		2.5072	2.5072		6,654.8292	6,654.8292	1.6238		6,688.9282

Total	**5.4248**	**50.5408**	**28.0322**	**0.0666**		**2.6136**	**2.6136**		**2.5072**	**2.5072**		**6,654.8292**	**6,654.8292**	**1.6238**		**6,688.9282**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4424	8.9392	3.3311	0.0249	0.5919	0.1289	0.7207	0.1620	0.1185	0.2806		2,515.1797	2,515.1797	0.0169		2,515.5351
Vendor	0.4102	7.0770	3.0146	0.0206	0.6162	0.1285	0.7447	0.1756	0.1182	0.2938		2,072.7856	2,072.7856	0.0144		2,073.0870
Worker	1.0596	2.5837	27.8021	0.0712	5.7447	0.0386	5.7833	1.5230	0.0355	1.5585		5,944.3636	5,944.3636	0.2833		5,950.3135
Total	**1.9122**	**18.5999**	**34.1478**	**0.1167**	**6.9528**	**0.2960**	**7.2488**	**1.8606**	**0.2722**	**2.1329**		**10,532.3290**	**10,532.3290**	**0.3146**		**10,538.9356**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.4248	50.5408	28.0322	0.0666		2.6136	2.6136		2.5072	2.5072	0.0000	6,654.8292	6,654.8292	1.6238		6,688.9282
Total	**5.4248**	**50.5408**	**28.0322**	**0.0666**		**2.6136**	**2.6136**		**2.5072**	**2.5072**	**0.0000**	**6,654.8292**	**6,654.8292**	**1.6238**		**6,688.9282**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4424	8.9392	3.3311	0.0249	0.5919	0.1289	0.7207	0.1620	0.1185	0.2806		2,515.1797	2,515.1797	0.0169		2,515.5351
Vendor	0.4102	7.0770	3.0146	0.0206	0.6162	0.1285	0.7447	0.1756	0.1182	0.2938		2,072.7856	2,072.7856	0.0144		2,073.0870
Worker	1.0596	2.5837	27.8021	0.0712	5.7447	0.0386	5.7833	1.5230	0.0355	1.5585		5,944.3636	5,944.3636	0.2833		5,950.3135
Total	**1.9122**	**18.5999**	**34.1478**	**0.1167**	**6.9528**	**0.2960**	**7.2488**	**1.8606**	**0.2722**	**2.1329**		**10,532.3290**	**10,532.3290**	**0.3146**		**10,538.9356**

3.7 Substation Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3913	15.8384	8.7614	0.0141		0.8064	0.8064		0.7419	0.7419		1,466.4717	1,466.4717	0.4423		1,475.7609
Total	**1.3913**	**15.8384**	**8.7614**	**0.0141**		**0.8064**	**0.8064**		**0.7419**	**0.7419**		**1,466.4717**	**1,466.4717**	**0.4423**		**1,475.7609**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3913	15.8384	8.7614	0.0141		0.8064	0.8064		0.7419	0.7419	0.0000	1,466.4717	1,466.4717	0.4423		1,475.7608
Total	**1.3913**	**15.8384**	**8.7614**	**0.0141**		**0.8064**	**0.8064**		**0.7419**	**0.7419**	**0.0000**	**1,466.4717**	**1,466.4717**	**0.4423**		**1,475.7608**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.8 Gen-Tie Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7111	32.7896	20.0443	0.0412		1.5774	1.5774		1.4512	1.4512		4,279.9056	4,279.9056	1.2910		4,307.0160
Total	**2.7111**	**32.7896**	**20.0443**	**0.0412**		**1.5774**	**1.5774**		**1.4512**	**1.4512**		**4,279.9056**	**4,279.9056**	**1.2910**		**4,307.0160**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7111	32.7896	20.0443	0.0412		1.5774	1.5774		1.4512	1.4512	0.0000	4,279.9056	4,279.9056	1.2910		4,307.0160
Total	**2.7111**	**32.7896**	**20.0443**	**0.0412**		**1.5774**	**1.5774**		**1.4512**	**1.4512**	**0.0000**	**4,279.9056**	**4,279.9056**	**1.2910**		**4,307.0160**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Mitigated	0.1719	0.6886	2.9680	7.8200e-003	0.5391	9.8700e-003	0.5490	0.1439	9.0700e-003	0.1530		681.5534	681.5534	0.0266		682.1125
Unmitigated	0.1719	0.6886	2.9680	7.8200e-003	0.5391	9.8700e-003	0.5490	0.1439	9.0700e-003	0.1530		681.5534	681.5534	0.0266		682.1125

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	20.00	20.00	20.00	254,800	254,800
Total	20.00	20.00	20.00	254,800	254,800

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	14.70	6.60	6.60	0.00	0.00	0.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.510118	0.073510	0.192396	0.133166	0.036737	0.005265	0.012605	0.021642	0.001847	0.002083	0.006548	0.000610	0.003471

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	lb/day										lb/day					
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Vegetation

CalEEMod Version: CalEEMod.2013.2.2

Jacumba Solar Project

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	108.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2016
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Construction Phase - soil import added

Grading - 6,300 cy import

Trips and VMT - updated per comments

Construction Off-road Equipment Mitigation - water area 3x per day

Off-road Equipment - no equipment for import phase

Vehicle Trips - max 20 trips per day

Water And Wastewater - water use = 1,080,000 gal/yr

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.9736	11.1237	8.6409	0.0248	1.4699	0.4218	1.8917	0.5401	0.3931	0.9332	0.0000	2,171.2862	2,171.2862	0.2094	0.0000	2,175.6845
Total	**0.9736**	**11.1237**	**8.6409**	**0.0248**	**1.4699**	**0.4218**	**1.8917**	**0.5401**	**0.3931**	**0.9332**	**0.0000**	**2,171.2862**	**2,171.2862**	**0.2094**	**0.0000**	**2,175.6845**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.9736	11.1237	8.6409	0.0248	1.1041	0.4218	1.5259	0.3546	0.3931	0.7477	0.0000	2,171.2855	2,171.2855	0.2094	0.0000	2,175.6838
Total	**0.9736**	**11.1237**	**8.6409**	**0.0248**	**1.1041**	**0.4218**	**1.5259**	**0.3546**	**0.3931**	**0.7477**	**0.0000**	**2,171.2855**	**2,171.2855**	**0.2094**	**0.0000**	**2,175.6838**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**24.89**	**0.00**	**19.34**	**34.35**	**0.00**	**19.88**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0310	0.1330	0.5164	1.3600e-003	0.0958	1.7900e-003	0.0976	0.0256	1.6500e-003	0.0273	0.0000	107.7520	107.7520	4.3900e-003	0.0000	107.8442
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	3.9213	3.9213	1.6000e-004	3.0000e-005	3.9348
Total	**0.0310**	**0.1330**	**0.5164**	**1.3600e-003**	**0.0958**	**1.7900e-003**	**0.0976**	**0.0256**	**1.6500e-003**	**0.0273**	**0.0000**	**111.6733**	**111.6733**	**4.5500e-003**	**3.0000e-005**	**111.7790**

Mitigated Operational

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0310	0.1330	0.5164	1.3600e-003	0.0958	1.7900e-003	0.0976	0.0256	1.6500e-003	0.0273	0.0000	107.7520	107.7520	4.3900e-003	0.0000	107.8442
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	3.9213	3.9213	1.6000e-004	3.0000e-005	3.9348
Total	**0.0310**	**0.1330**	**0.5164**	**1.3600e-003**	**0.0958**	**1.7900e-003**	**0.0976**	**0.0256**	**1.6500e-003**	**0.0273**	**0.0000**	**111.6733**	**111.6733**	**4.5500e-003**	**3.0000e-005**	**111.7790**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/1/2016	5/14/2016	6	12	
2	Grading	Grading	5/15/2016	6/29/2016	6	39	
3	Grading - Soil Import	Grading	5/15/2016	6/29/2016	6	39	
4	Underground Electrical	Trenching	6/30/2016	10/20/2016	6	97	
5	PV Racks and Solar Panel Installation	Building Construction	6/30/2016	10/20/2016	6	97	
6	Substation Construction	Building Construction	8/1/2016	9/19/2016	6	43	
7	Gen-Tie Construction	Building Construction	9/5/2016	10/1/2016	6	24	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 108

Acres of Paving: 0

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

OffRoad Equipment

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
PV Racks and Solar Panel Installation	14	126.00	10.00	776.00	60.00	68.00	85.00	LD_Mix	HDT_Mix	HHDT
Grading	12	30.00	104.00	624.00	60.00	68.00	85.00	LD_Mix	HDT_Mix	HHDT
Substation Construction	4	0.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT

Gen-Tie Construction	10	0.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	4	10.00	44.00	192.00	60.00	68.00	85.00	LD_Mix	HDT_Mix	HHDT
Underground Electrical	4	126.00	10.00	776.00	60.00	68.00	85.00	LD_Mix	HDT_Mix	HHDT
Grading - Soil Import	0	0.00	0.00	630.00	0.00	0.00	55.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0723	0.0000	0.0723	0.0397	0.0000	0.0397	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0195	0.2196	0.1670	1.7000e-004		0.0104	0.0104		9.5300e-003	9.5300e-003	0.0000	16.0392	16.0392	4.8400e-003	0.0000	16.1408
Total	**0.0195**	**0.2196**	**0.1670**	**1.7000e-004**	**0.0723**	**0.0104**	**0.0826**	**0.0397**	**9.5300e-003**	**0.0493**	**0.0000**	**16.0392**	**16.0392**	**4.8400e-003**	**0.0000**	**16.1408**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.4300e-003	0.1113	0.0436	3.0000e-004	6.9500e-003	1.5500e-003	8.5000e-003	1.9100e-003	1.4200e-003	3.3300e-003	0.0000	27.3743	27.3743	1.8000e-004	0.0000	27.3782
Vendor	0.0111	0.1940	0.0860	5.4000e-004	0.0159	3.3900e-003	0.0193	4.5600e-003	3.1200e-003	7.6800e-003	0.0000	49.6242	49.6242	3.4000e-004	0.0000	49.6314

Worker	4.9000e-004	1.3600e-003	0.0122	3.0000e-005	2.6700e-003	2.0000e-005	2.6900e-003	7.1000e-004	2.0000e-005	7.3000e-004	0.0000	2.4336	2.4336	1.2000e-004	0.0000	2.4362
Total	**0.0170**	**0.3067**	**0.1418**	**8.7000e-004**	**0.0256**	**4.9600e-003**	**0.0305**	**7.1800e-003**	**4.5600e-003**	**0.0117**	**0.0000**	**79.4321**	**79.4321**	**6.4000e-004**	**0.0000**	**79.4457**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0282	0.0000	0.0282	0.0155	0.0000	0.0155	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0195	0.2196	0.1670	1.7000e-004		0.0104	0.0104		9.5300e-003	9.5300e-003	0.0000	16.0392	16.0392	4.8400e-003	0.0000	16.1408
Total	**0.0195**	**0.2196**	**0.1670**	**1.7000e-004**	**0.0282**	**0.0104**	**0.0385**	**0.0155**	**9.5300e-003**	**0.0250**	**0.0000**	**16.0392**	**16.0392**	**4.8400e-003**	**0.0000**	**16.1408**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.4300e-003	0.1113	0.0436	3.0000e-004	6.9500e-003	1.5500e-003	8.5000e-003	1.9100e-003	1.4200e-003	3.3300e-003	0.0000	27.3743	27.3743	1.8000e-004	0.0000	27.3782
Vendor	0.0111	0.1940	0.0860	5.4000e-004	0.0159	3.3900e-003	0.0193	4.5600e-003	3.1200e-003	7.6800e-003	0.0000	49.6242	49.6242	3.4000e-004	0.0000	49.6314
Worker	4.9000e-004	1.3600e-003	0.0122	3.0000e-005	2.6700e-003	2.0000e-005	2.6900e-003	7.1000e-004	2.0000e-005	7.3000e-004	0.0000	2.4336	2.4336	1.2000e-004	0.0000	2.4362
Total	**0.0170**	**0.3067**	**0.1418**	**8.7000e-004**	**0.0256**	**4.9600e-003**	**0.0305**	**7.1800e-003**	**4.5600e-003**	**0.0117**	**0.0000**	**79.4321**	**79.4321**	**6.4000e-004**	**0.0000**	**79.4457**

3.3 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5270	0.0000	0.5270	0.2644	0.0000	0.2644	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2310	2.7083	1.8657	2.1000e-003		0.1252	0.1252		0.1152	0.1152	0.0000	197.7460	197.7460	0.0597	0.0000	198.9986
Total	**0.2310**	**2.7083**	**1.8657**	**2.1000e-003**	**0.5270**	**0.1252**	**0.6522**	**0.2644**	**0.1152**	**0.3796**	**0.0000**	**197.7460**	**197.7460**	**0.0597**	**0.0000**	**198.9986**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0177	0.3619	0.1417	9.7000e-004	0.0226	5.0300e-003	0.0276	6.2000e-003	4.6200e-003	0.0108	0.0000	88.9666	88.9666	6.0000e-004	0.0000	88.9792
Vendor	0.0850	1.4902	0.6607	4.1700e-003	0.1225	0.0261	0.1485	0.0350	0.0240	0.0590	0.0000	381.2037	381.2037	2.6400e-003	0.0000	381.2592
Worker	4.7600e-003	0.0133	0.1191	3.1000e-004	0.0260	1.8000e-004	0.0262	6.9200e-003	1.6000e-004	7.0800e-003	0.0000	23.7274	23.7274	1.1900e-003	0.0000	23.7525
Total	**0.1074**	**1.8653**	**0.9216**	**5.4500e-003**	**0.1711**	**0.0313**	**0.2024**	**0.0481**	**0.0288**	**0.0769**	**0.0000**	**493.8976**	**493.8976**	**4.4300e-003**	**0.0000**	**493.9908**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Fugitive Dust					0.2055	0.0000	0.2055	0.1031	0.0000	0.1031	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2310	2.7083	1.8657	2.1000e-003		0.1252	0.1252		0.1152	0.1152	0.0000	197.7457	197.7457	0.0597	0.0000	198.9983
Total	**0.2310**	**2.7083**	**1.8657**	**2.1000e-003**	**0.2055**	**0.1252**	**0.3307**	**0.1031**	**0.1152**	**0.2183**	**0.0000**	**197.7457**	**197.7457**	**0.0597**	**0.0000**	**198.9983**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0177	0.3619	0.1417	9.7000e-004	0.0226	5.0300e-003	0.0276	6.2000e-003	4.6200e-003	0.0108	0.0000	88.9666	88.9666	6.0000e-004	0.0000	88.9792
Vendor	0.0850	1.4902	0.6607	4.1700e-003	0.1225	0.0261	0.1485	0.0350	0.0240	0.0590	0.0000	381.2037	381.2037	2.6400e-003	0.0000	381.2592
Worker	4.7600e-003	0.0133	0.1191	3.1000e-004	0.0260	1.8000e-004	0.0262	6.9200e-003	1.6000e-004	7.0800e-003	0.0000	23.7274	23.7274	1.1900e-003	0.0000	23.7525
Total	**0.1074**	**1.8653**	**0.9216**	**5.4500e-003**	**0.1711**	**0.0313**	**0.2024**	**0.0481**	**0.0288**	**0.0769**	**0.0000**	**493.8976**	**493.8976**	**4.4300e-003**	**0.0000**	**493.9908**

3.4 Grading - Soil Import - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.4000e-004	0.0000	4.4000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.4000e-004**	**0.0000**	**4.4000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0126	0.2389	0.1118	6.4000e-004	0.0148	3.2900e-003	0.0181	4.0500e-003	3.0300e-003	7.0800e-003	0.0000	58.2962	58.2962	4.0000e-004	0.0000	58.3046
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0126**	**0.2389**	**0.1118**	**6.4000e-004**	**0.0148**	**3.2900e-003**	**0.0181**	**4.0500e-003**	**3.0300e-003**	**7.0800e-003**	**0.0000**	**58.2962**	**58.2962**	**4.0000e-004**	**0.0000**	**58.3046**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.7000e-004	0.0000	1.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0126	0.2389	0.1118	6.4000e-004	0.0148	3.2900e-003	0.0181	4.0500e-003	3.0300e-003	7.0800e-003	0.0000	58.2962	58.2962	4.0000e-004	0.0000	58.3046
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0126**	**0.2389**	**0.1118**	**6.4000e-004**	**0.0148**	**3.2900e-003**	**0.0181**	**4.0500e-003**	**3.0300e-003**	**7.0800e-003**	**0.0000**	**58.2962**	**58.2962**	**4.0000e-004**	**0.0000**	**58.3046**

3.5 Underground Electrical - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0765	0.7098	0.4875	6.2000e-004		0.0550	0.0550		0.0506	0.0506	0.0000	58.5513	58.5513	0.0177	0.0000	58.9222
Total	**0.0765**	**0.7098**	**0.4875**	**6.2000e-004**		**0.0550**	**0.0550**		**0.0506**	**0.0506**	**0.0000**	**58.5513**	**58.5513**	**0.0177**	**0.0000**	**58.9222**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0220	0.4500	0.1762	1.2100e-003	0.0281	6.2500e-003	0.0344	7.7100e-003	5.7500e-003	0.0135	0.0000	110.6379	110.6379	7.5000e-004	0.0000	110.6536
Vendor	0.0203	0.3564	0.1580	1.0000e-003	0.0293	6.2300e-003	0.0355	8.3700e-003	5.7300e-003	0.0141	0.0000	91.1656	91.1656	6.3000e-004	0.0000	91.1789
Worker	0.0498	0.1386	1.2443	3.2700e-003	0.2720	1.8700e-003	0.2739	0.0722	1.7200e-003	0.0740	0.0000	247.8600	247.8600	0.0125	0.0000	248.1218

Total	**0.0921**	**0.9449**	**1.5785**	**5.4800e-003**	**0.3294**	**0.0144**	**0.3437**	**0.0883**	**0.0132**	**0.1015**	**0.0000**	**449.6634**	**449.6634**	**0.0139**	**0.0000**	**449.9542**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0765	0.7098	0.4875	6.2000e-004		0.0550	0.0550		0.0506	0.0506	0.0000	58.5512	58.5512	0.0177	0.0000	58.9221
Total	**0.0765**	**0.7098**	**0.4875**	**6.2000e-004**		**0.0550**	**0.0550**		**0.0506**	**0.0506**	**0.0000**	**58.5512**	**58.5512**	**0.0177**	**0.0000**	**58.9221**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0220	0.4500	0.1762	1.2100e-003	0.0281	6.2500e-003	0.0344	7.7100e-003	5.7500e-003	0.0135	0.0000	110.6379	110.6379	7.5000e-004	0.0000	110.6536
Vendor	0.0203	0.3564	0.1580	1.0000e-003	0.0293	6.2300e-003	0.0355	8.3700e-003	5.7300e-003	0.0141	0.0000	91.1656	91.1656	6.3000e-004	0.0000	91.1789
Worker	0.0498	0.1386	1.2443	3.2700e-003	0.2720	1.8700e-003	0.2739	0.0722	1.7200e-003	0.0740	0.0000	247.8600	247.8600	0.0125	0.0000	248.1218
Total	**0.0921**	**0.9449**	**1.5785**	**5.4800e-003**	**0.3294**	**0.0144**	**0.3437**	**0.0883**	**0.0132**	**0.1015**	**0.0000**	**449.6634**	**449.6634**	**0.0139**	**0.0000**	**449.9542**

3.6 PV Racks and Solar Panel Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2631	2.4512	1.3596	3.2300e-003		0.1268	0.1268		0.1216	0.1216	0.0000	292.8022	292.8022	0.0714	0.0000	294.3025
Total	**0.2631**	**2.4512**	**1.3596**	**3.2300e-003**		**0.1268**	**0.1268**		**0.1216**	**0.1216**	**0.0000**	**292.8022**	**292.8022**	**0.0714**	**0.0000**	**294.3025**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0220	0.4500	0.1762	1.2100e-003	0.0281	6.2500e-003	0.0344	7.7100e-003	5.7500e-003	0.0135	0.0000	110.6379	110.6379	7.5000e-004	0.0000	110.6536
Vendor	0.0203	0.3564	0.1580	1.0000e-003	0.0293	6.2300e-003	0.0355	8.3700e-003	5.7300e-003	0.0141	0.0000	91.1656	91.1656	6.3000e-004	0.0000	91.1789
Worker	0.0498	0.1386	1.2443	3.2700e-003	0.2720	1.8700e-003	0.2739	0.0722	1.7200e-003	0.0740	0.0000	247.8600	247.8600	0.0125	0.0000	248.1218
Total	**0.0921**	**0.9449**	**1.5785**	**5.4800e-003**	**0.3294**	**0.0144**	**0.3437**	**0.0883**	**0.0132**	**0.1015**	**0.0000**	**449.6634**	**449.6634**	**0.0139**	**0.0000**	**449.9542**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Off-Road	0.2631	2.4512	1.3596	3.2300e-003		0.1268	0.1268		0.1216	0.1216	0.0000	292.8019	292.8019	0.0714	0.0000	294.3022
Total	**0.2631**	**2.4512**	**1.3596**	**3.2300e-003**		**0.1268**	**0.1268**		**0.1216**	**0.1216**	**0.0000**	**292.8019**	**292.8019**	**0.0714**	**0.0000**	**294.3022**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0220	0.4500	0.1762	1.2100e-003	0.0281	6.2500e-003	0.0344	7.7100e-003	5.7500e-003	0.0135	0.0000	110.6379	110.6379	7.5000e-004	0.0000	110.6536
Vendor	0.0203	0.3564	0.1580	1.0000e-003	0.0293	6.2300e-003	0.0355	8.3700e-003	5.7300e-003	0.0141	0.0000	91.1656	91.1656	6.3000e-004	0.0000	91.1789
Worker	0.0498	0.1386	1.2443	3.2700e-003	0.2720	1.8700e-003	0.2739	0.0722	1.7200e-003	0.0740	0.0000	247.8600	247.8600	0.0125	0.0000	248.1218
Total	**0.0921**	**0.9449**	**1.5785**	**5.4800e-003**	**0.3294**	**0.0144**	**0.3437**	**0.0883**	**0.0132**	**0.1015**	**0.0000**	**449.6634**	**449.6634**	**0.0139**	**0.0000**	**449.9542**

3.7 Substation Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0299	0.3405	0.1884	3.0000e-004		0.0173	0.0173		0.0160	0.0160	0.0000	28.6028	28.6028	8.6300e-003	0.0000	28.7839
Total	**0.0299**	**0.3405**	**0.1884**	**3.0000e-004**		**0.0173**	**0.0173**		**0.0160**	**0.0160**	**0.0000**	**28.6028**	**28.6028**	**8.6300e-003**	**0.0000**	**28.7839**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0299	0.3405	0.1884	3.0000e-004		0.0173	0.0173		0.0160	0.0160	0.0000	28.6027	28.6027	8.6300e-003	0.0000	28.7839
Total	**0.0299**	**0.3405**	**0.1884**	**3.0000e-004**		**0.0173**	**0.0173**		**0.0160**	**0.0160**	**0.0000**	**28.6027**	**28.6027**	**8.6300e-003**	**0.0000**	**28.7839**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.8 Gen-Tie Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0325	0.3935	0.2405	4.9000e-004		0.0189	0.0189		0.0174	0.0174	0.0000	46.5920	46.5920	0.0141	0.0000	46.8871
Total	**0.0325**	**0.3935**	**0.2405**	**4.9000e-004**		**0.0189**	**0.0189**		**0.0174**	**0.0174**	**0.0000**	**46.5920**	**46.5920**	**0.0141**	**0.0000**	**46.8871**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0325	0.3935	0.2405	4.9000e-004		0.0189	0.0189		0.0174	0.0174	0.0000	46.5919	46.5919	0.0141	0.0000	46.8871
Total	**0.0325**	**0.3935**	**0.2405**	**4.9000e-004**		**0.0189**	**0.0189**		**0.0174**	**0.0174**	**0.0000**	**46.5919**	**46.5919**	**0.0141**	**0.0000**	**46.8871**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Mitigated	0.0310	0.1330	0.5164	1.3600e-003	0.0958	1.7900e-003	0.0976	0.0256	1.6500e-003	0.0273	0.0000	107.7520	107.7520	4.3900e-003	0.0000	107.8442
Unmitigated	0.0310	0.1330	0.5164	1.3600e-003	0.0958	1.7900e-003	0.0976	0.0256	1.6500e-003	0.0273	0.0000	107.7520	107.7520	4.3900e-003	0.0000	107.8442

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	20.00	20.00	20.00	254,800	254,800
Total	20.00	20.00	20.00	254,800	254,800

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	14.70	6.60	6.60	0.00	0.00	0.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.510118	0.073510	0.192396	0.133166	0.036737	0.005265	0.012605	0.021642	0.001847	0.002083	0.006548	0.000610	0.003471

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

Land Use	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

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

Mitigated

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

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	3.9213	1.6000e-004	3.0000e-005	3.9348
Unmitigated	3.9213	1.6000e-004	3.0000e-005	3.9348

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 1.08	3.9213	1.6000e-004	3.0000e-005	3.9348

Total		**3.9213**	**1.6000e-004**	**3.0000e-005**	**3.9348**

<u>**Mitigated**</u>

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 1.08	3.9213	1.6000e-004	3.0000e-005	3.9348
Total		**3.9213**	**1.6000e-004**	**3.0000e-005**	**3.9348**

8.0 Waste Detail

8.1 Mitigation Measures Waste

<u>**Category/Year**</u>

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

10.0 Vegetation

Jacumba GHG Emissions Offset

Maximum Installed Capacity (MW_{DC})	kWh_{AC} per Installed kW_{DC}	Annual Output (kWh)
28	2,000	56,000,000

CO_2 Emission Factor (lb/kWh)	CH_4 Emission Factor (lb/kWh)	N_2O Emission Factor (lb/kWh)	Annual GHG Offset (MT CO_2E)
1.071	0.000029	0.000014	27,333

Notes:
CO_2 emission factor based on 739.05 lb/MWh in 2008 and adjustment for 10% renewables/3% large hydro/18% nuclear in 2009 (no Power Content Label available for 2008)
http://www.sdge.com/sites/default/files/FINAL092610_PowerLabel.pdf

APPENDIX B

~~SCREEN 3~~AERMOD/HARP2 Model Results and Cancer Risk Calculation

HARP2 - HRACalc (dated 15065) 6/27/2015 3:27:19 PM - Output Log

GLCs loaded successfully

Pollutants loaded successfully

****

Start Age: -0.25

Total Exposure Duration: 0.6

****

Exposure Duration Bin Distribution

3rd Trimester Bin: 0.25

0<2 Years Bin: 0.6

2<9 Years Bin: 0

2<16 Years Bin: 0

16<30 Years Bin: 0

16 to 70 Years Bin: 0

****

Pathways Enabled

Inhalation: True

Soil: False

Dermal: False

Mother's Milk: False

Water: False

Fish: False

Homegrown Crops: False

Beef: False

Dairy: False

Pig: False

Chicken: False

Egg: False

Calculating cancer risk

Cancer risk saved to: C:\Users\Lora\Documents\ILANCO\CLIENTS\Dudek\MasterServices\Jacumba Solar\HARP Files\Jacumba2CancerRisk.csv

HRA ran successfully

Air Dispersion Source Parameters																		
	Source ID	**Description**	**Source Type**	**Width (m)**	**Height (m)**	**Sigma y (m)**	**Sigma z (m)**	**Temp (K)**	**Vel (m/s)**	**Diam (m)**	**Area (m2)**	**Unit Emission Rate for Polygon Source (1g/s)/(m2)**	**AERMOD Unit Concentration (ug/m3)/(1g/s) at MEIR**	**CalEEMod Total DPM exhaust (ton/yr)**	**Annualized DPM exhaust (g/s)**	**Annualized DPM Concentration (ug/m3)**	**Cancer Risk**
Unmitigated Construction	ALL01	Combined sources	poly-area	na	5	na	1.16	na	na	na	418,325	2.39049E-06	0.0666	0.4218	0.0429157	0.002858185	3.21E-07

Notes:

All sources were modeled over the grading area polygon.
DPM=PM10
Cancer risk was calculated with HARP2, Risk Assessment Standalone Tool v. 15076: 0.5 years exposure, 3rd trimester start date.
Operating Schedule:
8 hr/day
6 day/week
4.3 week/mont
6 months/yr

Air Dispersion Modeling Source Parameters not used - analysis was done with a single source spread over the grading area.

		Source Parameters									Emission Rate						
Source Parameter ID	Description	Source Type	Width (m)	Height (m)	Sigma y (m)	Sigma z (m)	Temp (K)	Vel (m/s)	Diam (m)	Area (m2)	PM10 (g/s)	Unit Emission Rate/Area for BEEST PM10 (g/s-m2)	Equipment Count	Hours/Day	Total Days (days/yr)	Horsepower (hp)	Load Factor
LIF01	Aerial Lifts	poly-area	na	3.048	na	0.71	na	na	na	418,325	0.00179	2.390E-06	3	8	67	62	0.31
COM01	Air Compressor	poly-area	na	3.048	na	0.71	na	na	na	418,325	0.00826	2.390E-06	2	6	97	78	0.48
BOR01	Bore/Drill Rigs	poly-area	na	3.048	na	0.71	na	na	na	418,325	0.01456	2.390E-06	6	8	121	205	0.5
CRN01	Cranes	poly-area	na	3.048	na	0.71	na	na	na	418,325	0.02439	2.390E-06	4	5	164	226	0.29
EXV01	Excavators	poly-area	na	3.048	na	0.71	na	na	na	418,325	0.01717	2.390E-06	5	8	157	162	0.38
FOR01	Forklifts	poly-area	na	3.048	na	0.71	na	na	na	418,325	0.00772	2.390E-06	3	8	164	89	0.2
GEN01	Generator Sets	poly-area	na	3.048	na	0.71	na	na	na	418,325	0.01067	2.390E-06	2	8	164	84	0.74
DOZ01	Rubber Tired Dozers	poly-area	na	3.048	na	0.71	na	na	na	418,325	0.06100	2.390E-06	6	8	90	255	0.4
SCR01	Scrapers	poly-area	na	3.048	na	0.71	na	na	na	418,325	0.04469	2.390E-06	4	8	78	361	0.48
TRA01	Tractors/Loaders/Backhoes	poly-area	na	3.048	na	0.71	na	na	na	418,325	0.03947	2.390E-06	10	7	351	97	0.37
TRE01	Trenchers	poly-area	na	3.048	na	0.71	na	na	na	418,325	0.00601	2.390E-06	1	8	97	80	0.5
WEL01	Welders	poly-area	na	3.048	na	0.71	na	na	na	418,325	0.00447	2.390E-06	2	7	164	46	0.45

Emission Factor (g/bhp-hr)	Annualized PM10 emissions (g/s)	Unit Concentration (ug/m3)/(1g/s) from BEEST	Annualized Concentration (ug/m3)
0.1119	3.290E-04	0.06669	2.19404E-05
0.397	2.194E-03	0.06669	0.00014635
0.0852	4.825E-03	0.06669	0.000321785
0.3349	1.096E-02	0.06669	0.000730787
0.2008	7.385E-03	0.06669	0.00049249
0.5203	3.468E-03	0.06669	0.000231262
0.309	4.795E-03	0.06669	0.000319749
0.3588	1.504E-02	0.06669	1.003E-03
0.2321	9.550E-03	0.06669	0.000636859
0.3959	3.796E-02	0.06669	0.002531229
0.5413	1.598E-03	0.06669	0.000106595
0.389	2.010E-03	0.06669	0.000134048

Equipment List

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Total Number of Days
Substation Cons	Aerial Lifts	1	8	62	0.31	43
Gen-Tie Constru	Aerial Lifts	2	8	62	0.31	24
PV Racks and So	Air Compress	2	6	78	0.48	97
PV Racks and So	Bore/Drill Rig	4	8	205	0.5	97
Gen-Tie Constru	Bore/Drill Rig	2	8	205	0.5	24
PV Racks and So	Cranes	2	4	226	0.29	97
Substation Cons	Cranes	1	8	226	0.29	43
Gen-Tie Constru	Cranes	1	4	226	0.29	24
Grading	Excavators	0	8	162	0.38	39
Site Preparation	Excavators	2	8	162	0.38	12
Substation Cons	Excavators	1	8	162	0.38	43
Gen-Tie Constru	Excavators	2	8	162	0.38	24
Grading - Soil Im	Excavators	0	8	162	0.38	39
PV Racks and So	Forklifts	2	8	89	0.2	97
Substation Cons	Forklifts	1	8	89	0.2	43
Gen-Tie Constru	Forklifts	0	8	89	0.2	24
PV Racks and So	Generator Se	2	8	84	0.74	97
Substation Cons	Generator Se	0	8	84	0.74	43
Gen-Tie Constru	Generator Se	0	8	84	0.74	24
Grading	Graders	0	8	174	0.41	39
Grading - Soil Im	Graders	0	8	174	0.41	39
Grading	Rubber Tired	4	8	255	0.4	39
Site Preparation	Rubber Tired	2	8	255	0.4	12
Grading - Soil Im	Rubber Tired	0	8	255	0.4	39
Grading	Scrapers	4	8	361	0.48	39
Grading - Soil Im	Scrapers	0	8	361	0.48	39
PV Racks and So	Tractors/Loa	0	7	97	0.37	97
Grading	Tractors/Loa	4	8	97	0.37	39
Substation Cons	Tractors/Loa	0	7	97	0.37	43
Gen-Tie Constru	Tractors/Loa	3	6	97	0.37	24
Site Preparation	Tractors/Loa	0	8	97	0.37	12
Underground El	Tractors/Loa	3	8	97	0.37	97
Grading - Soil Im	Tractors/Loa	0	8	97	0.37	39
Underground El	Trenchers	1	8	80	0.5	97
Substation Cons	Welders	0	8	46	0.45	43
Gen-Tie Constru	Welders	0	8	46	0.45	24
PV Racks and So	Welders	2	6	46	0.45	97

Source: CalEEMod

Phase Name	Num Days
Site Preparation	12
Grading	39
Grading - Soil Import	39
Underground Electrical	97
PV Racks and Solar Panel Installation	97
Substation Construction	43
Gen-Tie Construction	24

Source: CalEEMod

*HARP - HRACalc v15065 6/27/2015 3:27:19 PM - Cancer Risk

INDEX	GRP1	GRP2	POLID	POLABBRE\	CONC	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_R	MMILK_RIS
1			9901	DieselExhP	0.002858	3.21E-07	0.6YrCance	*	3.21E-07	0.00E+00	0.00E+00	0.00E+00

WATER_RI!	FISH_RISK	CROP_RISK	BEEF_RISK	DAIRY_RISI	PIG_RISK	CHICKEN_F	EGG_RISK	1ST_DRIVE	2ND_DRIVI	PASTURE_(	FISH_CON(	WATER_CC
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION		0.00E+00	0.00E+00	0.00E+00

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