2.2 Air Quality

This section discusses potential impacts to air quality resulting from the implementation of the Proposed Project. Information and analysis in this section have been compiled based on an understanding of the existing ambient air quality of the San Diego Air Basin (SDAB) and review of existing technical data, applicable laws, regulations, and guidelines, as well as the following technical reports prepared for the Proposed Project, consistent with the County Report Requirements:

- *Air Quality Technical Report, Tierra del Sol Solar Farm Project* (Appendix 2.2-1)
- *Air Quality Technical Report, Rugged Solar Farm Project* (Appendix 2.2-2).

2.2.1 Existing Conditions

This section describes the existing setting in the Proposed Project area and also identifies the resources that could be affected by the Proposed Project.

2.2.1.1 Climate and Topography

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.

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.

2.2.1.2 Air Pollution Climatology

The Proposed Project site is located within the SDAB 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 less than 10 microns (PM_{10}), particulate matter less than 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 rainfall, 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. The other 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.

2.2.1.3 Air Quality Characteristics

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 those persons termed 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. People most likely to be affected by air pollution, as identified by the California Air Resources Board (CARB), include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

2.2.1.4 Pollutants and Effects

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards (AAQS), 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, sulfur dioxide (SO_2), PM_{10}, $PM_{2.5}$, and lead (Pb). These pollutants are discussed below.[1] In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

Ozone. O_3 is a colorless gas that is formed in the atmosphere when volatile organic compounds (VOCs), sometimes referred to as reactive organic gases (ROGs), 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

[1] The following descriptions of health effects for each of the criteria air pollutants associated with project construction and operations are based on the Environmental Protection Agency's (EPA's) "Six Common Air Pollutants" (EPA 2012a) and the CARB "Glossary of Air Pollutant Terms" (CARB 2012a) published information.

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 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 (PM) 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 VOCs. 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 Pb, 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.

Toxic Air Contaminants. A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic noncancer health effects. A toxic substance released into the air is considered a toxic air contaminant (TAC). Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources such as automobiles; and area sources such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced either on short-term (acute) or long-term (chronic) exposure to a given TAC.

2.2.1.5 Local Air Quality

SDAB Attainment Designation

An area is designated in attainment when it is in compliance with the National Ambient Air Quality Standards (NAAQS) and/or California Ambient Air Quality Standards (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 air quality assessment include 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 SDAB is designated by 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 was 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, both 1-hour and 8-hour, and PM_{10} and $PM_{2.5}$ under the CAAQS. It is designated attainment for CO, NO_2, SO_2, lead, and sulfates.

Table 2.2-1, SDAB Attainment Classification, summarizes SDAB's federal and state attainment designations for each of the criteria pollutants.

2.2.1.6 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 2008 through 2012 are presented in Table 2.2-2, Ambient Air Quality Data. The number of days exceeding the AAQS is shown in Table 2.2-3, Frequency of Air Quality Standard Violations. The federal and state 8-hour and state 1-hour O_3 standards were exceeded every year from 2008 to 2012. 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 2011. 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.

2.2.2 Regulatory Setting

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 EPA is responsible for implementing most aspects of the CAA, including the setting of NAAQS for major air pollutants, hazardous air pollutant standards (HAPs), approval of state attainment plans, motor vehicle emission standards, stationary source emission standards and permits, acid rain control measures, stratospheric O_3 protection, and enforcement provisions. NAAQS are established for "criteria pollutants" under the CAA, which are O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and Pb.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The CAA 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.

State

The federal CAA delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts (AQMDs) and air pollution control districts (APCDs) at the regional and county levels. CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for ensuring implementation of the California Clean Air Act (CCAA) of 1988, responding to the federal CAA, and regulating emissions from motor vehicles and consumer products.

CARB has established CAAQS, which are generally more restrictive than the NAAQS, consistent with the CAA, which requires state regulations to be at least as restrictive as the federal requirements. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 2.2-4, Ambient Air Quality Standards.

As part of its diesel risk reduction program, CARB adopted an Airborne Toxic Control Measure (ATCM) that applies to new and in-use stationary compression-ignition (i.e., diesel) engines. The ATCM was adopted in 2004 and revised in November 2010 with an effective date of May 19, 2011. After December 31, 2008, the ATCM requires that new emergency standby engines must comply with EPA emission standards applicable to a 2007-model-year off-road engine of the same horsepower rating. The ATCM further limits the particulate matter (PM) emissions from an emergency standby engine operated less than 50 hours per year for maintenance and testing to 0.15 gram per brake-horsepower-hour.

Local

San Diego Air Pollution Control District

While CARB is responsible for the regulation of mobile emission sources within the state, local AQMDs and APCDs are responsible for enforcing standards and regulating stationary sources. The project is located within the SDAB and is subject to SDAPCD guidelines and regulations. In San Diego County, O_3 and particulate matter are the pollutants of main concern, since exceedances of state AAQS 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 nonattainment area and a CO maintenance area (western part of the SDAB only); the project area is a CO attainment 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 AAQS 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). 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, as well as information regarding projected growth in San Diego County and the cities in the 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 *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 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 (NO_x and 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 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 evaluates 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 would apply to construction of the Proposed Project and some of the proposed stationary sources:

- **SDAPCD Regulation II: Permits; Rule 10: Permits Required.** Requires that any person building, erecting, altering, or replacing any article, machine, equipment or other contrivance, the use of which may cause the issuance of air contaminants, shall receive written authorization (Authority to Construction) and a Permit to Operate from the SDAPCD (SDAPCD 2000).
- **SDAPCD Regulation II: Permits; Rule 20.1: New Source Review – General Provisions.** Establishes the general provisions, including exemptions, definitions, and emission calculations, that apply to any new or modified emission unit, any replacement emission unit, any relocated emission unit or any portable emission unit for which an Authority to Construct or Permit to Operate is required (SDAPCD 1998a).
- **SDAPCD Regulation II: Permits; Rule 20.2: New Source Review – Non-Major Sources.** Applies to any new or modified stationary source, to any new or modified emission unit and to any relocated emission unit that is not considered a major stationary source. As applied to new or modified sources, the rule requires (1) the use of Best Available Control Technology (BACT) where the emissions of PM_{10}, NO_x, VOC, or SO_x would increase by 10 pounds per day or more; (2) an air quality impact analysis if the emissions of PM_{10}, NO_x, VOC, SO_x, or lead exceed designated trigger levels; and (3) establishes public noticing requirements prior to issuance of a permit (SDAPCD 1998b).
- **SDAPCD Regulation IV: Prohibitions; Rule 50: Visible Emissions.** Prohibits any activity causing air contaminant emissions darker than 20% opacity for more than an aggregate of 3 minutes in any consecutive 60-minute time period. In addition, Rule 50

prohibits any diesel pile-driving hammer activity causing air contaminant emissions for a period or periods aggregating more than 4 minutes during the driving of a single pile (SDAPCD 1997).

- **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).
- **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 trackout and carryout onto paved roads beyond a project site (SDAPCD 2009).
- **SDAPCD Regulation IV: Prohibitions; Rule 67.0: Architectural Coatings.** Requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories (SDAPCD 2001)**.**
- **SDAPCD Regulation XII: Prohibitions; Rule 1200: Toxic Air Contaminants – New Source Review.** (SDAPCD 1996a). Applies to any new, relocated, or modified emission unit which may increase emissions of one or more TACs that requires an Authority to Construct or Permit to Operate. The rule establishes acceptable risk levels and emission control requirements for new and modified facilities that may emit additional TACs. 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 Toxics-BACT (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 Regulation XI: National Emission Standards for Hazardous Air Pollutants; Subpart M, Rule 361.145: Standard for Demolition and Renovation.** Requires owners and operators of a demolition or renovation activity to provide written notification of planned asbestos stripping or removal to the Control Officer no less than 10 days prior to demolition and/or asbestos removal. A Notification of Demolition and Renovation Form and fee is required with written notification. Procedures for asbestos emission control are provided under Rule 361.145 and must be followed in accordance with this regulation (SDAPCD 1995).

2.2.3 Analysis of Project Effects and Determination as to Significance

The Proposed Project consists of four renewable energy solar farms in southeastern San Diego County. The following impact analysis has been separated into discussions for each of

the four solar farms: Tierra del Sol, Rugged, LanEast, and LanWest, as well as a combined discussion of the Proposed Project as a whole. For the purposes of this Program Environmental Impact Report (EIR), the Tierra del Sol and Rugged solar farms are analyzed at a project level, whereas the LanEast and LanWest solar farms are analyzed at a programmatic level of analysis.

Methodology and Assumptions

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 delivery trucks. Operational emissions would result primarily from vehicle exhaust (i.e., mobile sources).

The air quality technical reports (Appendices 2.2-1 and 2.2-2), as listed above, were utilized to complete this section. The analysis in these reports utilized different methodologies for estimating construction and operational emissions for the Tierra del Sol and Rugged solar farms. Although two different overarching methodologies were used, both methodologies used the same overall emission factors and common assumptions, where applicable. Both methodologies have been reviewed and approved by the County of San Diego. Details regarding methodologies used for the Tierra del Sol solar farm and the Rugged solar farm analyses are described in Appendices 2.2-1 and 2.2-2, respectively. Because common emission factors and assumptions were used, where applicable, the results of the two reports are comparable and able to be aggregated as provided in this section for the Proposed Project.

Some of the common assumptions for Tierra del Sol and Rugged are listed as follows:

- Trip distances were conservatively estimated for the model inputs for all construction vehicles as follows:
    - Construction worker vehicles were assumed to originate from 35 miles away based on local workforce from Alpine, El Centro, and surrounding areas[2]
    - Material deliveries were assumed to be transported from the Rancho Bernardo area of San Diego, which is the likely location for production of the solar trackers.
- Fugitive dust emissions during site preparation and road construction were estimated using a "worst-case" emission factor of 38.2 pounds per acre-day[3].

[2] The average of the distances from Alpine and El Centro is 46 miles. This distance was reduced by 25% to reflect worker commute trips from local housing (temporary or permanent) for an average worker commute distance of 35 miles.

[3] For road construction, fugitive dust emissions were estimated using a "worst-case" emission factor of 38.2 pounds per acre-day, which is recommended in URBEMIS 2007 for grading for activities involving substantial earthmoving activity (Jones & Stokes 2007).

- All cut and fill would be balanced on site, and would not require extensive soil hauling throughout either of the sites.
- Construction activities would generally occur for 6 days per week at 8 hours per day.
- For the purposes of modeling, O&M vehicles for the solar farms were assumed to conduct approximately 10 miles per day of maintenance activities per vehicle, and vehicles would be stored on site. O&M vehicles would include pickup trucks, employee personnel vehicles, and heavy-duty washing vehicles.
- Long-term (i.e., operational) regional emissions of criteria air pollutants and precursors were quantified using emission factors derived from EMFAC and OFFROAD, which are the models used as the basis for on-road vehicle and construction equipment emissions in the URBEMIS model. Mobile-source emissions were modeled based on the net increase in daily vehicle trips and the net increase in regional vehicle miles traveled that would result from maintenance activities.

Water demands during construction would vary over the first 2 months. Over the peak water demand operations, water would be supplied from the Padre Dam Municipal District (approximately 58 miles from the Proposed Project site), other water purveyors, or off-site wells. After the initial site preparation, on-site supply wells will be sufficient to meet the construction water demands.

San Diego Air Pollution Control District Thresholds

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 2.2-5, 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 emission would not result in a significant impact to air quality.

The thresholds listed in Table 2.2-5 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 are considered to 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 2.2-5, the 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 incorporates 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.

2.2.3.1 Conformance to the Regional Air Quality Strategy

Guidelines for the Determination of Significance

For the purpose of this EIR, the County's *Guidelines for Determining Significance: Air Quality* (County of San Diego 2007) applies to both the direct impact analysis and the cumulative impact analysis. A significant impact would result if:

- The Proposed Project will conflict with or obstruct the implementation of the RAQS and/or applicable portions of the SIP.

Analysis

As mentioned in Section 2.2.2, SDAPCD and SANDAG are responsible for developing and implementing the clean air plan for attainment and maintenance of the AAQS in the SDAB. 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 RAQS relies 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 the 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 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 include proposed development that is consistent with the growth anticipated by local plans would be consistent with the RAQS. However, if a project includes development that is greater than that anticipated in the local plan and SANDAG's growth projections, the project might be in conflict with the RAQS and may contribute to a potentially significant cumulative impact on air quality.

Tierra del Sol

The General Plan Land Use Designation for the Tierra del Sol site is Rural with a density of 1 dwelling unit per 80 acres. The zoning is General Rural (S92) and General Agriculture (A72). The Tierra del Sol solar farm would consist of approximately 2,657 trackers on 420 acres. The General Plan allows for development of approximately five dwelling units (420 acres/80 acres per dwelling unit) on the Tierra de Sol site. Based on trip generation rates for certain land uses based on equations included in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, the existing General Plan designation of RL-80 would allow approximately 48 trips per day.[4]

The operation of the solar farm would result in a small increase in local employment and associated trips. As stated in the *Housing Element Background Report* for the General Plan prepared in April 2013, the County currently projects 1.6 million jobs will exist in San Diego County by 2018, which represents a 9.5% growth in employment from 2008 (County of San Diego 2013). The operation of Tierra del Sol would require between six to seven full-time employees accessing the site on a daily basis to clean and maintain the facilities. As indicated in Section 3.1.8, the Tierra del Sol solar farm would generate fewer than 14 trips per day, which is less than the amount anticipated under the current designation. Additionally, there are no residential or commercial uses proposed with the solar farm development that would result in population increases beyond what is approved in the General Plan. As such, the Tierra del Sol solar farm would consist of a less intense land use, from an air quality perspective, than what is currently allowed under the County General Plan.

As the Tierra del Sol solar farm would not contribute to local population growth or substantial employment growth and associated vehicle miles traveled (VMT) on local roadways, the solar farm is considered accounted for in the RAQS, and the solar farm would not conflict with or obstruct the implementation of the RAQS and/or applicable portions of the SIP. Impacts would be considered **less than significant**.

Rugged

The General Plan Land Use Designation for the Rugged site is Rural Lands with a permitted density of 1 dwelling unit per 80 acres (RL-80). Based on the allowable density for the Rugged site, approximately nine residential dwelling units could be developed on site. Based on trip generation rates for certain land uses based on equations included in the ITE *Trip Generation Manual*, the existing General Plan designation of RL-80 would allow

[4] At a density of 1 unit per 80 acres, the development of the 420-acre project site would allow 5 dwelling units. Using a trip generation rate of 9.57 trips per single-family residential unit (ITE 2008), this level of land use would generate 47.85 trips per day.

approximately 86 trips per day.[5] As indicated in Section 3.1.8, the Rugged solar farm would generate fewer than 40 trips per day, which is less than the amount anticipated under the current designation.

Additionally, there are no residential or commercial uses proposed with the solar farm development that would result in population increase beyond what is approved in the General Plan. As stated in the *Housing Element Background Report* for the General Plan prepared in April 2013, the County currently projects 1.6 million jobs will exist in San Diego County by 2018, which represents a 9.5% growth in employment from 2008 (County of San Diego 2013). The operation of the solar farm would result in 15 to 20 fulltime employees, which is considered a small increase in local employment that is far less than what was anticipated by the General Plan. As such, the Rugged solar farm would consist of a less intense land use, from an air quality perspective, than what is currently allowed under the County General Plan.

The Rugged solar farm would not significantly increase mobile source emissions that have been previously included in the RAQS. Therefore, the vehicle trips, VMT, and emissions associated with implementation of the Rugged solar farm have been accounted for in the emissions modeling for the current RAQS and would be accounted for in future RAQSs. Accordingly, implementation of the Rugged solar farm would not exceed the assumptions used to develop the current RAQS and would not obstruct or conflict with the implementation of the RAQS and/or applicable portions of the SIP. Impacts would be considered **less than significant**.

LanEast

The General Plan Land Use Designation for the LanEast site is Rural Lands with a permitted density of 1 dwelling unit per 80 acres (RL-80). Based on the allowable density for the LanEast site, approximately three residential dwelling units could be developed. Based on trip generation rates for certain land uses based on equations included in the ITE *Trip Generation Manual*, the existing General Plan designation of RL-80 would allow approximately 29 trips per day.[6] Considering the size and scale of the LanEast solar farm compared to the Tierra del Sol and Rugged solar farms, the proposed LanEast solar farm in comparison would require only minimal vehicle trips to the site for maintenance. As indicated in Section 3.1.8, the LanEast solar farm would generate fewer than nine trips per day, which is less than the amount anticipated under the current designation.

[5] At a density of 1 unit per 80 acres, the development of the 765-acre project site would allow 9 dwelling units. Using a trip generation rate of 9.57 trips per single-family residential unit (ITE 2008), this level of land use would generate 86.13 trips per day.

[6] At a density of 1 unit per 80 acres, the development of the 233-acre project site would allow 3 dwelling units. Using a trip generation rate of 9.57 trips per single-family residential unit (ITE 2008), this level of land use would generate 28.71 trips per day.

Additionally, there are no residential or commercial uses proposed with the LanEast solar farm development that would result in population increase beyond what is approved in the General Plan. As stated previously, the County currently projects 1.6 million jobs will exist in San Diego County by 2018, which represents a 9.5% growth in employment from 2008 (County of San Diego 2013). The operation of the solar farm would result in at least two to five fulltime employees, which is considered a small increase in local employment that is far less than what was anticipated by the General Plan. As such, the LanEast solar farm would consist of a less intense land use, from an air quality perspective, than what is currently allowed under the County General Plan. Therefore, the LanEast solar farm would not significantly increase mobile source emissions that have been previously planned for in the RAQS. In addition, the LanEast solar farm would be consistent with the applicable County General Plan; therefore, the emissions associated with implementation of the LanEast solar farm have been accounted for in the emissions modeling for the current RAQS and would be accounted for in future RAQS. Accordingly, implementation of the LanEast solar farm would not conflict with or obstruct the implementation of the RAQS and/or applicable portions of the SIP. Impacts would be considered **less than significant**.

LanWest

Similar to the LanEast site, the General Plan Land Use Designation for the LanWest site is Rural Lands with a permitted density of one dwelling unit per 80 acres (RL-80). Based on the allowable density for the LanWest site, less than one residential dwelling unit could be developed. Based on trip generation rates for certain land uses based on equations included in the ITE *Trip Generation Manual*, the existing General Plan designation of RL-80 would allow approximately 7 trips per day[7]. Considering the size and scale of the LanWest solar farm compared to the Tierra del Sol and Rugged solar farms, the proposed LanWest solar farm in comparison would require only minimal vehicle trips to the site for maintenance. As indicated in Section 3.1.8, the LanWest solar farm would generate fewer than nine trips per day, which is less than the amount anticipated under the current designation.

Additionally, there are no proposed residential or commercial uses proposed with the LanWest solar farm development that would result in population increase beyond what is approved in the General Plan. As stated previously, the County currently projects 1.6 million jobs will exist in San Diego County by 2018, which represents a 9.5% growth in employment from 2008 (County of San Diego 2013). The operation of the solar farm would result in at least two to four fulltime employees, which is a small increase in local employment that is far less than what was anticipated by the General Plan. As such, the LanWest solar farm would consist of a less intense land use, from an air quality perspective, than what is currently allowed under the

[7] At a density of 1 unit per 80 acres, the development of the 55-acre project site would allow less than one dwelling unit. Using a trip generation rate of 9.57 trips per single-family residential unit (ITE 2008), this level of land use would generate approximately 7 trips per day.

County General Plan. Therefore, the LanWest solar farm would not significantly increase mobile source emissions that have been previously planned for in the RAQS. In addition, the LanWest solar farm would be consistent with the applicable County General Plan and be planned for in the next RAQS. Therefore, the emissions associated with implementation of the LanWest solar farm have been accounted for in the emissions modeling for the current RAQS and would be accounted for in future RAQSs. Accordingly, implementation of the LanWest solar farm would not conflict with or obstruct the implementation of the RAQS and/or applicable portions of the SIP. Impacts would be considered **less than significant**.

Proposed Project

As previously described, the Proposed Project area is located in San Diego County within the SDAB, which is governed by the SDAPCD. The SDAPCD regulates air quality through its permit authority over most types of stationary emission sources and through its planning and enforcement activities.

An air quality plan describes air pollution control strategies that are to be implemented by a region classified as a nonattainment area. The purpose of an air quality plan is to eventually bring the area into compliance with federal and state requirements.

The SDAB is a federal and state nonattainment area for 8-hour O_3, and a state nonattainment area for 1-hour O_3, PM_{10}, and $PM_{2.5}$. The periodic violations of NAAQS in the SDAB, particularly for O_3 in inland foothills areas, require that a plan be developed outlining the pollution controls that would be undertaken to improve air quality.

The Proposed Project site is currently designated Rural Lands (RL) with a permitted density of 1 dwelling unit per 80 acres. Existing zoning is General Rural (S92), Limited Agriculture (A70), and General Agriculture (A72). The Proposed Project consists of solar energy development and would consist of approximately 7,290 trackers on 1,473 acres. Based on the allowable density for the Proposed Project site, 18 dwelling units could be developed. Based on trip generation rates for certain land uses based on equations included in the ITE *Trip Generation Manual* and used in URBEMIS, the existing General Plan designation of RL-80 would allow approximately 182 trips per day.[8] The Proposed Project would generate fewer than 72 trips per day combined, which is less than the amount anticipated under the current designation for all four sites combined. Additionally, no residential or commercial development that would result in population increases is proposed. The operation of the Proposed Project would only result in up to 36 fulltime employees, which is a small increase

[8] At a density of 1 unit per 80 acres, the development of the 1,490-acre project site would allow 19 dwelling units. Using a trip generation rate of 9.57 trips per single-family residential unit (ITE 2008), this level of land use would generate 181.83 trips per day.

in local employment that is far less than what was anticipated by the general Plan Land Use Element. As such, the Proposed Project would consist of a less intense land use than what is currently allowed under the County General Plan.

The Proposed Project (1) would not contribute to local population growth or substantial employment growth and associated VMT on local roadways, (2) is considered accounted for in the RAQS, and (3) would not conflict with or obstruct the implementation of the RAQS and/or applicable portions of the SIP. Therefore, impacts would be considered **less than significant**.

2.2.3.2 Conformance to Federal and State Ambient Air Quality Standards

Guidelines for the Determination of Significance

For the purpose of this EIR, the County's *Guidelines for Determining Significance: Air Quality* (County of San Diego 2007) applies to both the direct impact analysis and the cumulative impact analysis. A significant impact would result if the Proposed Project would:

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

Analysis

Construction of the Proposed Project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, dust emissions, and combustion pollutants from on-site construction equipment and off-site trucks hauling construction materials including water to the 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. See Chapter 1.0, Project Description, and Figures 1-6 and 1-8 for details regarding road locations and dimensions. NO_x and CO emissions would primarily result from the use of construction equipment and motor vehicles.

Tierra del Sol

Construction Impacts

See Section 2.2.3, Methodology and Assumptions, for details regarding general analysis approach and common assumptions. See Appendix 2.2-1 for specific details regarding emissions estimate calculations and assumptions for the Tierra del Sol solar farm.

The Tierra del Sol solar farm is anticipated to commence construction in September 2014 and would be completed within approximately 14 months for both Phases I and II. While the schedule may be modified due to the date of County project approval as well other project approvals/permits, this table illustrates the approximate duration of major project activities. Construction activities would occur between the hours of 7 a.m. and 7 p.m., Monday through Saturday.

Construction phases and associated durations were provided by the project proponent and include the following phases:

- Mobilization (1 week)
- Clearing, grubbing, and grinding (9 weeks)
- Grading and road construction (8 days)
- Underground electric/communications cable installation (17 weeks)
- Tracker installation Phase 1a – 30 megawatts (MW) (20 weeks)
- Tracker installation Phase 1b – 15 MW (7 weeks)
- Tracker installation Phase 2a – 15 MW (7 weeks)
- Substation construction (4 weeks)
- Operations and maintenance (O&M) building construction (13 weeks)
- Gen-tie (10 weeks, commencing prior to clearing/grubbing/grinding).

Table 2.2-6 shows the construction schedule for the Tierra del Sol solar farm.

As shown in Table 2.2-6, completion of the Tierra del Sol solar farm, including construction of the gen-tie, is anticipated to be completed by November 2015. Details of the construction schedule including heavy construction equipment hours of operation and duration, worker trips, and equipment mix are included in Appendix 2.2-1.

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.

Grading activities would be specifically associated with road construction following site clearing, grubbing, and grinding. No mass grading of the entire site would be required.

Water demands during construction would vary over the first 2 months (about 50 working days). Based on the estimated water demands for the proposed project, an estimated 50 acre-feet of water would be required during clearing, grubbing, and grading activities. Over the peak water demand

operations, an estimated 32 acre-feet (an average of approximately 208,545 gallons per day) of additional water would be supplied from off-site sources. Approximately 64% of the water distributed on site for dust control during site preparation activities would be imported from the Padre Dam Municipal District, other water purveyors, or off-site wells requiring approximately 35 6,000-gallon water trucks per day for water import. The remaining water demand would be provided from an on-site well at a rate of 117,336 gallons per day. After the initial site preparation, the on-site supply well will be sufficient to meet the construction water demands.

Additionally, the following project design features (PDFs), as listed in Table 1-10 of Chapter 1.0, Project Description, will be implemented during construction activities and reduce NO_x and PM_{10} emissions.

PDF-AQ-1 The following measures will be applied to the Proposed Project to minimize fugitive dust (PM_{10}) and to comply with County Code Section 87.428 (Grading Ordinance), the following will be implemented:

- The applicants will apply water three times per day or as necessary depending on weather conditions to suppress fugitive dust during grubbing, clearing, grading, trenching, and soil compaction and/or apply a nontoxic soil binding agent to help with soil stabilization during construction. These measures will be applied to all active construction areas, unpaved access roads, parking areas, and staging areas as necessary.
- Sweepers and water trucks will be used to control dust and debris at public street access points.
- Internal construction roadways will be stabilized by paving, chip sealing or nontoxic soil binders after rough grading.
- Exposed stockpiles (e.g., dirt, sand) will be covered and/or watered or stabilized with nontoxic soil binders, tarps, fencing or other suppression methods as needed to control emissions.
- Traffic speeds on unpaved roads will be limited to 15 miles per hour (mph).
- All haul and dump trucks entering or leaving the site with soil or fill material will maintain at least 2 feet of freeboard, or cover loads of all haul and dump trucks securely.
- Disturbed areas will be reseeded with either a native plant hydroseed mix as soon as possible after disturbance, or covered with a nontoxic soil binding agent (Such as EP&A's Envirotac II and Rhinosnot Dust Control, Erosion Control and Soil Stabilization).

PDF-AQ-2 To reduce NO_x and PM_{10} emissions associated with construction worker trips required during Proposed Project construction, the construction manager will implement a construction worker ridership program to encourage at least 30% of workers to carpool to and from the construction site to reduce single-occupancy vehicle trips. The construction manager will log all daily construction worker trips using the San Diego iCommute program (SANDAG 2013) (accessed at http://www.icommutesd.com/) or similar program. The construction manager will notify all construction personnel of the program prior to the start of construction activities and will notify construction personnel of the iCommute program RideMatcher feature, or similar communication method, to ensure personnel can identify potential carpooling program participants. Trip data will be made readily available to County inspectors at the construction trailer on site during construction.

Construction activities would be subject to several control measures per the requirements of the County, SDAPCD rules, and CARB air toxic control measures. 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 and **PDF-AQ-1**, resulting in an approximately 61% reduction of particulate matter. Emission estimates shown in Table 2.2-7 include the required control measures that were incorporated into the modeling for estimated construction emissions generated during the Tierra del Sol construction period. See Appendix 2.2-1 for details regarding emission calculations and assumptions.

Table 2.2-7, 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.

As shown, daily construction emissions for the Tierra del Sol solar farm would not exceed the thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$, and would therefore be **less than significant.**

Operational Impacts

Operation of the Tierra del Sol solar farm would produce VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions associated with worker vehicles, personnel transport vehicles, panel washing equipment (IPC Eagle Wash Station), and service trucks during operation and maintenance for the solar project. Substantial area source emissions generated from natural gas use are not

anticipated, as the O&M building and substation would not require natural gas consumption during project operations.

The Tierra del Sol solar farm would have a marginal impact to air quality though O&M vehicles will be used on the site during monitoring, tracker washing, inspection, and repair activities throughout the life of the solar farm. The O&M activities would occur an approximate 22 working days per month over 12 months for a total of 264 work days per year for worker vehicle frequency. On-site operations activity would include in-place panel washing every 6 weeks to 2 months or less frequently by mobile crews who would also be available for dispatch whenever on-site repairs or other maintenance are required. Tracker washing would require the use of panel washing equipment (IPC Eagle Wash Station). The proposed Tierra del Sol gen-tie would also involve regular herbicide application, transmission pole and structure brushing, equipment repair, and aerial inspections twice annually by helicopter. Additionally, the operations and maintenance would require approximately 7 full-time employees that would generate up to 14 daily trips.

Table 2.2-8, Tierra del Sol – Estimated Daily Maximum Operational Emissions, presents the maximum daily emissions associated with the operation of the Tierra del Sol solar farm. The maximum daily emissions assume that all O&M activities associated with the solar farm and the gen-tie could occur on the same day.

As shown, daily operational emissions would not exceed the thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. Although emissions would be below the thresholds, **PDF-AQ-3** will be implemented during project operation:

PDF-AQ-3 The following will be implemented to reduce fugitive dust emissions during project operation:

- Enforce a 15-mph speed limit on unpaved surfaces
- Provide any of the following or equally effective trackout/carryout and erosion control measures to minimize transfer of soil or other materials to public roads:
  - trackout grates or gravel beds at each egress point
  - wheel washing at each egress during muddy conditions
  - application of nontoxic, permeable soil binding agent; chemical soil stabilizers; geotextiles; mulching; and/or seeding annually.

Impacts during project operation would be **less than significant**.

Decommissioning Impacts

The expected lifespan of the Tierra del Sol solar farm is estimated to be at least 30 years or longer. At the end of the useful life of the solar farm, two alternative scenarios are possible: (1) Re-tool the technology and contract to sell energy to a utility; (2) If no other buyer of the energy emerges, the solar farm could be decommissioned and dismantled.

Dismantling the Tierra del Sol solar farm would entail disassembly of the solar facilities and substantive restoration of the site. Impacts associated with closure and decommissioning of the site would be temporary and would be associated with disassembly and removal of all detachable aboveground elements of the installation; removal of tracker masts and any other structural elements, including those that penetrate the ground surface to a depth of 20 feet below grade; and reuse of the land consistent with the Zoning Ordinance, which could include ground surface restoration to surrounding grade and re-seeding with appropriate native vegetation. 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 at the time of decommissioning (e.g., in 30 years all off-road diesel engines are anticipated to meet Tier 4 or better requirements at a minimum and motor vehicles will meet future fuel efficiency and air quality emissions standards). As with the construction emissions, the emissions resulting from decommissioning are expected to be below the County's thresholds for criteria pollutants as listed in Table 2.2-1, and impacts would be **less than significant**.

Rugged

Construction Impacts

See Section 2.2.3, Methodology and Assumptions, for details regarding general analysis approach and common assumptions. See Appendix 2.2-2 for specific details regarding emissions estimate calculations and assumptions for the Rugged solar farm.

Construction of the Rugged solar farm is anticipated to commence in July 2014 and would require approximately 12 months for completion. Table 2.2-9, Rugged Construction Schedule, provides the proposed schedule for Rugged. While the schedule may be modified due to the date of County project approval as well other project approvals/permits, this table illustrates the approximate duration of major project activities. Construction activities would occur between the hours of 7 a.m. and 7 p.m., Monday through Saturday.

Construction phases and associated durations were provided by the project proponent and would include the following:

- Mobilization (1 week)
- Site clearing, grubbing, and grinding (10 weeks)

- Grading and road construction (9 days)
- Underground electric/communications cable installation (17 weeks)
- Tracker installation (33 weeks)
- Substation construction (6 weeks)
- O&M building construction (10 weeks).

Project completion is anticipated in late June 2015. Details of the construction schedule including heavy construction equipment hours of operation and duration, worker trips, and equipment mix are included in Appendix 2.2-2.

Grading activities would be specifically associated with road construction following site clearing, grubbing, and grinding. No mass grading of the entire site would be required.

To provide the concrete for the substation, O&M building, and tracker foundations for both the Rugged and Tierra del Sol solar projects, a temporary concrete batch plant would be sited on the Rugged project site. The batch plant would involve material transfer and handling processes that would be the sources of fugitive PM_{10} and $PM_{2.5}$ emissions. These material transfer and handling processes would include aggregate and sand delivery to ground sources such as on-site ground storage and piles, aggregate and sand transfer to conveyors, and aggregate and sand transfer to elevated storage. All these processes were assumed to be controlled with water sprays for which an efficiency of 70% was assumed (BAAQMD 2009). Emissions from transfer of cement and cement supplement to storage silos and the truck loading would be controlled by baghouses; thus, controlled PM_{10} and $PM_{2.5}$ emission factors were used for these sources. The PM_{10} and $PM_{2.5}$ emissions from the processing equipment were calculated using Section 11.12 (Concrete Batching) of EPA's *Compilation of Air Pollutant Emission Factors* (EPA 2006).

The emissions associated with material hauling trucks used to bring concrete ingredients (e.g., sand, cement, and cement supplement) to the project site were estimated using emission factors derived from EMFAC2011. Process rates for concrete and the ingredients, truck travel distances, and related information are found in Appendix 2.2-2. Aggregate would be derived from the Rugged project site and utilized in the batch plant processes as described above. The batch plant would be powered by two diesel-powered generators, each nominally rated at 85 horsepower. The emissions from the two generators were calculated using emission and load factors obtained from the *CalEEMod User's Guide* (Environ 2011) assuming the use of typical off-road engines that would operate in 2014.

Water demands during construction would vary over the first 2 to 3 months (about 60 working days). Based on the estimated water demands for the Rugged site, up to 48 acre-

feet of water would be required during clear, grub, and grading activities. Over the peak water demand operations, an estimated 15.73 acre-feet (an average of approximately 85,400 gallons per day) of water would be supplied from off-site sources. Approximately 70% of the water distributed on site for dust control during site preparation activities would be imported from the Padre Dam Municipal District, other water purveyors, or off-site wells requiring approximately 15 6,000-gallon water trucks per day for water import. The remaining water demand would be provided from on-site wells at a rate of 173,780 gallons per day. After the initial site preparation, the on-site supply wells will be sufficient to meet the construction water demands.

Construction activities would be subject to several control measures per the requirements of the County, SDAPCD rules, and CARB air toxic control measures. 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 and **PDF-AQ-1**, resulting in an approximately 61% reduction of particulate matter. **PDF-AQ-1** and **PDF-AQ-2** as listed in Table 1-10 of Section 1.0, Project Description, will be implemented during construction activities and reduce NO_x and PM_{10} emissions. Emission estimates shown in Table 2.2-10 include the required control measures that were incorporated into the modeling for estimated construction emissions generated during the Rugged construction period. See Appendix 2.2-2 for details regarding emission calculations and assumptions.

Table 2.-10, 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.

As shown in Table 2.2-10, construction-related emissions of VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ would not exceed the County's screening level thresholds. Additionally, implementation of **PDF-AQ-1** and **PDF-AQ-2**, as listed in Table 1-10 of Section 1.0, Project Description, during construction activities for the Rugged solar farm would ensure NO_x and PM_{10} emissions would be further reduced. Impacts during construction would be **less than significant**.

Operational Impacts

Operations of the Rugged solar farm would produce VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions associated with worker vehicles, personnel transport vehicles, panel washing equipment (IPC Eagle Wash Station), and service trucks during operations and maintenance for the solar project. Area source emissions generated from natural gas use are not

anticipated, as the O&M building and substation would not require natural gas consumption during project operations.

The Rugged solar farm would marginally impact air quality through O&M vehicles frequenting the site during monitoring, tracker washing, inspection, and repair activities throughout the life of the solar farm. It was assumed O&M activities would occur 22 work days per month over 12 months for 264 work days per year for worker vehicles. On-site operations activity would include in-place tracker washing every 6 weeks to 2 months or less frequently by mobile crews who would also be available for dispatch whenever on-site repairs or other maintenance are required. Panel washing would be undertaken using an IPC Eagle Wash Station which would be towed by a pick-up, ATV or Cushman electric cart. Additionally, the operations and maintenance would require approximately 20 full-time employees that would generate up to 40 daily trips.

The solar farm would be equipped with two emergency generators. The diesel-powered generators are each anticipated to be rated at 680 kilowatts. Operational emissions would result from intermittent use of emergency generators for maintenance and testing purposes. Each generator would be run for testing and maintenance approximately 1 hour each week for a total of 50 hours per year. In the event of an electrical outage, both of the emergency generators would be expected to operate no more than 20 minutes to bring all the trackers into the stow mode position. The generator engines would meet the CARB/EPA standards for Tier 2 engines as required by the CARB ATCM for new and in-use stationary diesel engines. The engines would also be required to use ultra-low-sulfur diesel fuel with a maximum sulfur content of 15 ppm by weight. The estimated emissions from the emergency generator engines are based on compliance with the Tier 2 engine standards and use of ultra-low-sulfur diesel fuel.

Table 2.2-11 presents the maximum daily operational emissions associated with the Rugged solar farm.

As shown in Table 2.2-11, daily operational emissions would not exceed the thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. Although emissions would be below the thresholds, **PDF-AQ-3** as stated above will be implemented during project operation to further reduce fugitive dust emissions. Therefore, operational impacts would be **less than significant**.

Decommissioning Impacts

Similar to the Tierra del Sol solar farm, dismantling the Rugged solar farm would entail disassembly of the solar facilities and substantive restoration of the site. Impacts associated with closure and decommissioning of the site would be temporary and would be associated with disassembly and removal of all detachable aboveground elements of the installation; removal of tracker masts and any other structural elements, including those that penetrate the

ground surface to a depth of 20 feet below grade; and reuse of the land consistent with the Zoning Ordinance, which could include ground surface restoration to surrounding grade and re-seeding with appropriate native vegetation. 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 at the time of decommissioning (e.g., in 30 years all off-road diesel engines will meet Tier 4 or better requirements at a minimum and motor vehicles will meet future fuel efficiency and criteria pollutant emissions standards). As with the construction emissions, the emissions resulting from decommissioning are expected to be below the County's thresholds for criteria pollutants as listed in Table 2.2-1, and impacts would be **less than significant**.

LanEast

Construction Impacts

Construction of the LanEast solar farm would consist of several phases including site preparation, development of staging areas and site access roads, solar tracker array assembly and installation, and construction of electrical transmission facilities. Site preparation would include clearing and grubbing of sparse vegetation from areas of the site that would be utilized for project development.

Grading activities associated with road construction would be required similar to road construction for the Tierra del Sol and Rugged project sites; however, because the LanEast site is anticipated to require less road construction, less grading is anticipated to occur compared to the Tierra del Sol and Rugged project sites. Impacts during construction of the Tierra del Sol and Rugged project sites were found to be below the thresholds; however, because project-level information is not currently available for construction of the LanEast solar farm, it cannot be guaranteed that emissions would be below the thresholds, particularly regarding fugitive dust emissions. Impacts would be considered **potentially significant (AQ-LE-1)**.

LanEast construction traffic would primarily include the delivery of construction equipment, vehicles, and materials including concrete and possibly water; and daily construction worker trips. A majority of the equipment (e.g., solar panels, trackers, etc.) would be delivered to the site in standard width and length covered vans or flatbed trailers. A majority of the equipment, materials, and labor would be coming from the San Diego area. Additionally, the County of San Diego Grading Ordinance requires the control of dust through measures including, but not limited to, watering the site three times a day or applying nonchemical soil stabilizers to disturbed areas during grading activities. These measures would be applied to the LanEast solar farm.

Overall, construction of the LanEast solar farm would require similar equipment and construction activities as discussed above for the Tierra del Sol and Rugged solar farms (with the exception that the LanEast site would not include rock crushing or batch plant activities). Construction activities would be temporary and short-term in nature and would vary day to day depending on the nature or phase of construction (e.g., demolition/land clearing, grading and excavation, tracker installation). The LanEast project would require fewer trackers to be transported and installed, less overall water use (both on-site and imported sources) for dust control purposes, and a shorter overall construction schedule, and therefore, total annual emissions associated with LanEast would be lower. However, daily construction effort and equipment would be similar to Tierra del Sol (construction of the LanEast project would not require a rock crushing facility as included as part of the Rugged project), and therefore maximum daily construction emissions for LanEast are assumed to reflect maximum daily emission estimates provided in Table 2.2-7, Tierra del Sol – Estimated Daily Maximum Construction Emissions. Based on the size of the site in comparison to the Tierra del Sol and Rugged solar farms as previously analyzed, and the activities that would be required for construction, construction-related emissions of VOC, NO_x, CO, SO_x, PM_{10} and $PM_{2.5}$ are not expected to exceed the County's screening level thresholds. However, site design, construction schedule and equipment fleet has not yet been determined; therefore, a quantitative analysis cannot be conducted at this time and there is no guarantee emissions would not exceed County thresholds, particularly regarding PM_{10} and NO_x emissions. Impacts would be considered **potentially significant (AQ-LE-2)**.

Operational Impacts

The operation of the LanEast solar farm would result in emissions from mobile sources. O&M personnel, as well as equipment storage, are expected to be located off-site, at a nearby facility for all O&M personnel and equipment. Operation of the LanEast solar farm would entail off-site real-time monitoring of the site through the supervisory control and data acquisition (SCADA) system utilizing on-site sensors or a comparable system. The LanEast solar farm is expected to generate approximately nine daily trips generated from up to five full-time employees.

On-site operation activities would include in-place tracker washing every 6 weeks to 2 months or less frequently by mobile crews who would also be available for dispatch whenever on-site repairs or other maintenance are required. Panel washing would be undertaken using an IPC Eagle Wash Station which would be towed by a pick-up, ATV or Cushman electric cart. A pressure washer spray gun and mop-like attachment would be used to wash each individual panel.

While O&M activities would be similar to those activities occurring on the Tierra del Sol and Rugged solar farms (i.e., panel washing, herbicide application, inspections, and repairs), the

number of trackers developed on the LanEast solar farm would be approximately 66% less than developed on the Tierra del Sol solar farm and 75% less than developed on the Rugged solar farm. Therefore, O&M activities would be reduced compared to the Tierra del Sol and Rugged solar farms, although this reduction would not be directly proportional to the reduction in the number of trackers due to issues of increased efficiency with scale and site design. Nonetheless, maximum daily operational emissions for LanEast would be assumed to be similar to or less to those estimated for the Rugged project (Tierra del Sol emissions include maintenance of the gen-tie using helicopters, and are therefore, greater than Rugged emissions), as shown in Table 2.2-11, Rugged – Estimated Daily Maximum Operational Emissions, which presents the maximum daily emissions associated with the operation of the Rugged solar farm.

Based on program-level information known about the LanEast solar farm, and in comparison to the size and scale of the Tierra del Sol and Rugged solar farms, the LanEast operational emissions are not expected to exceed the County's screening level thresholds for VOC, NO_x, CO, PM_{10}, and $PM_{2.5}$. However, as previously mentioned, quantification of the impact is based upon a theoretical site design, construction schedule or equipment fleet. The project has not yet been defined and, therefore, criteria pollutant emissions for the LanEast solar farm must be reviewed in a subsequent analysis. As such, it cannot be guaranteed that emissions would be below the thresholds, and impacts would be considered **potentially significant (AQ-LE-3)**.

Decommissioning Impacts

Similar to the Tierra del Sol and Rugged solar farms, dismantling the LanEast solar farm would entail disassembly of the solar facilities and substantive restoration of the site. 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 at the time of decommissioning (e.g., in 30 years all off-road diesel engines will meet Tier 4 or better requirements at a minimum and motor vehicles will meet future fuel efficiency and criteria pollutant emissions standards). Emissions resulting from decommissioning are expected to be below the County's thresholds for criteria pollutants as listed in Table 2.2-1, and impacts would be considered **less than significant**.

LanWest

Construction Impacts

Construction of the LanWest solar farm would consist of several phases including site preparation, development of staging areas and site access roads, solar tracker array assembly and installation, and construction of electrical transmission facilities. Site preparation would include clearing and grubbing of sparse vegetation from areas of the site that would be utilized for

development. Grading activities associated with road construction would be required similar to road construction for the Tierra del Sol and Rugged project sites; however, because the LanWest site would require less road construction, less grading is anticipated to occur compared to the Tierra del Sol and Rugged project sites. Impacts during construction of the Tierra del Sol and Rugged project sites were found to be below the thresholds; however, because project-level information is not currently available for construction of the LanWest solar farm, it cannot be guaranteed that emissions would be below the thresholds, particularly regarding fugitive dust emissions. Impacts would be considered **potentially significant (AQ-LW-1)**.

LanWest construction traffic would primarily include the delivery of construction equipment, vehicles, and materials including concrete and possibly water; and daily construction worker trips. A majority of the equipment (e.g., solar panels, trackers, etc.) would be delivered to the site in standard width and length covered vans or flatbed trailers. A majority of the equipment, materials, and labor would be coming from the San Diego area. Additionally, the County of San Diego Grading Ordinance requires the control of dust through measures including, but not limited to, watering the site three times a day or applying nonchemical soil stabilizers to disturbed areas during grading activities. Similar measures would be applied to the LanWest solar farm.

Overall, construction of the LanWest solar farm would require similar equipment and construction activities as discussed above for the Tierra del Sol and Rugged solar farms (with the exception that the LanWest site would not include rock crushing activities). Construction activities would be temporary and short-term in nature and would vary day to day depending on the nature or phase of construction (e.g., demolition/land clearing, grading and excavation, tracker installation). The LanWest project would require fewer trackers to be transported and installed, less overall water use (both on-site and imported sources) for dust control purposes, and a shorter overall construction schedule, and therefore, total annual emissions associated with LanEast would be lower. However, daily construction effort and equipment would be similar to Tierra del Sol (construction of the LanWest project would not require a rock crushing facility as included as part of the Rugged project), and therefore maximum daily construction emissions for LanWest are assumed to reflect maximum daily emission estimates provided in Table 2.2-7, Tierra del Sol – Estimated Daily Maximum Construction Emissions. Based on the size of the site in comparison to the Tierra del Sol and Rugged solar farms previously analyzed, and the activities that would be required for construction of the proposed uses, construction-related emissions of VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ are not expected to exceed the County's screening level thresholds. However, site design, construction schedule, or equipment fleet has not yet been determined and, therefore, criteria pollutant emissions for the LanWest solar farm cannot be quantified at this time. Because daily emissions cannot be quantified, there is no guarantee emissions would not exceed County thresholds, particularly regarding PM_{10} and NO_x emissions. Impacts would be considered **potentially significant (AQ-LW-2)**.

Operational Impacts

The operation of the LanWest solar farm would result in emissions from mobile sources. O&M personnel, as well as equipment storage are expected to be located off site, at a nearby facility for all operations and maintenance personnel and equipment. Operations of the LanWest solar farm would entail off-site real-time monitoring of the solar farm through theSCADA system utilizing on-site sensors or a comparable system. The LanWest solar farm is expected to generate approximately nine daily trips generated from up to five full-time employees.

On-site operations activity would include in-place panel washing every 6 weeks to 2 months or less frequently by mobile crews who would also be available for dispatch whenever on-site repairs or other maintenance are required. Panel washing would be undertaken using an IPC Eagle Wash Station which would be towed by a pick-up, ATV or Cushman electric cart. A pressure washer spray gun and mop-like attachment would be used to wash each individual panel. Not more than 6.5 gallons of water would be required to wash each set of tracker panels. Panel washing for the LanWest solar farm would entail on-site presence of about 6 days per washing cycle.

While O&M activities would be similar to those activities occurring on the Tierra del Sol and Rugged solar farms (i.e. panel washing, herbicide application, inspections, and repairs), the number of trackers developed on the LanWest solar farm would be approximately 90% less than developed on the Tierra del Sol solar farm and 93% less than developed on the Rugged solar farm. Therefore, O&M activities would be reduced compared to the Tierra del Sol and Rugged solar farms, although this reduction would not be directly proportional to the reduction in the number of trackers due to issues of increased efficiency with scale and site design. Nonetheless, maximum daily operational emissions for LanWest would be assumed to be similar to or less than those estimated for the Rugged project (Tierra del Sol emissions include maintenance of the gen-tie using helicopters, and are therefore, greater than Rugged emissions), as shown in Table 2.2-11, Rugged – Estimated Daily Maximum Operational Emissions, which presents the maximum daily emissions associated with the operation of the Rugged solar farm.

Based on program-level information known about the LanWest solar farm, and in comparison to the size and scale of the Tierra del Sol and Rugged solar farms, the LanWest operational emissions are not expected to exceed the County's screening level thresholds for VOC, NO_x, CO, PM_{10}, and $PM_{2.5}$. However, as previously mentioned, site design, construction schedule, or equipment fleet has not yet been determined and, therefore, criteria pollutant emissions for the LanWest solar farm cannot be analyzed at this time. As such, it cannot be guaranteed that emissions would be below the thresholds, and impacts would be considered **potentially significant (AQ-LW-3)**.

Decommissioning Impacts

Similar to the Tierra del Sol and Rugged solar farms, dismantling the LanWest solar farm would entail disassembly of the solar facilities and substantive restoration of the site. 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 at the time of decommissioning (e.g., in 30 years all off-road diesel engines will meet Tier 4 or better requirements at a minimum and motor vehicles will meet future fuel efficiency and criteria pollutant emissions standards). Emissions resulting from decommissioning are expected to be below the County's thresholds for criteria pollutants as listed in Table 2.2-1, and impacts would be **less than significant**.

Proposed Project

Construction Impacts

As previously discussed, 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. 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 only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts. Fugitive dust (PM_{10} and $PM_{2.5}$) emissions would primarily result from grading and site preparation activities. NO_x and CO emissions would primarily result from the use of construction equipment and motor vehicles. During the finishing phase for substations and other buildings, paving operations and the application of architectural coatings (e.g., paints) would release VOCs.

The primary criteria air pollutants resulting from construction activities include NO_x, CO, PM_{10}, and $PM_{2.5}$ produced from the use of heavy equipment for site development and from fugitive dust. 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 (see **PDF-AQ-1**), resulting in an approximately 61% reduction of particulate matter. Additionally, it was assumed that construction workers would carpool to and from the site resulting in a 30% decrease in single-occupancy trips and associated fugitive dust and NO_x emissions as previously described in **PDF-AQ-2**.

The maximum daily criteria pollutant construction emissions generated from the Proposed Project are shown in Table 2.2-12. It should be noted that the maximum daily construction emissions occur during grading for the Tierra del Sol site, and tracker installation for the Rugged site. These construction phases occur concurrently, resulting in the maximum daily emissions

during overall construction activities for the Proposed Project. Table 2.2-13 and Table 2.2-14 show individual project construction schedules and emissions by construction phase for the Tierra del Sol solar farm and the Rugged solar farm, respectively.

As shown in Table 2.2-12, the Proposed Project is expected to remain below the daily significance thresholds for criteria air pollutants for VOC, CO, SO_x and $PM_{2.5}$. However, construction-related emissions would exceed the thresholds for NO_x and PM_{10} for a brief period during the overlap of construction of the Tierra del Sol grading phase (10/4/2014 – 12/13/2014) and Rugged tracker installation phase (8/27/2014 – 4/16/2015), specifically in the months of October, November, and December of 2014, and January of 2015. **PDF-AQ-1** and **PDF-AQ-2** as listed in Table 1-10 of Section 1.0, Project Description, would be implemented as part of the Proposed Project to reduce NO_x and PM_{10} emissions; however, impacts would remain above the threshold. NO_x and PM_{10} impacts would, therefore, be **potentially significant (AQ-PP-1 and AQ-PP-2)**.

Operational Impacts

The Proposed Project operational emissions would result from vehicle use associated with maintenance, repair, tracker washing, and inspection of the project components. The proposed gen-tie line associated with the Tierra del Sol solar farm would also involve regular herbicide application, pole and structure brushing, equipment repair, and aerial inspections twice annually by helicopter.

Trip distances, fleet assumptions, and annual trips per activity are provided in Appendices 2.2-1 and 2.2-2.

Operational emissions generated by the Proposed Project are shown in Table 2.2-15.

As shown in Table 2.2-15, operational emission levels would not exceed County thresholds of significance. Although emissions would below the thresholds, **PDF-AQ-3** would be implemented to further reduce fugitive dust emissions during project operation. Impacts during operation would be **less than significant**.

Decommissioning Impacts

The expected lifespan of the Proposed Project is estimated to be 30 to 40 years or longer. At the end of the useful life of the project, two alternative scenarios are possible: (1) re-tool the technology and contract to sell energy to a utility; (2) if no other buyer of the energy emerges, the solar plant can be decommissioned and dismantled.

Dismantling the Proposed Project would entail disassembly of the solar facilities and substantive restoration of the site. Impacts associated with closure and decommissioning of the

Proposed Project site would be temporary and would be associated with disassembly and removal of all detachable aboveground elements of the installation; removal of tracker masts and any other structural elements, including those that penetrate the ground surface to a depth of 2 feet below grade; and reuse of the land consistent with the Zoning Ordinance, which could include ground surface restoration to surrounding grade and re-seeding with appropriate native vegetation. 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 at the time of decommissioning (e.g., in 30 years all off-road diesel engines will meet Tier 4 or better requirements at a minimum and motor vehicles will meet future fuel efficiency and air quality emissions standards). Emissions resulting from decommissioning are expected to be below the County's thresholds for criteria pollutants as listed in Table 2.2-1 and impacts would be **less than significant**.

2.2.3.3 Impacts to Sensitive Receptors

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 or a health hazard index greater than one.
- The project places sensitive receptors near CO "hotspots" or creates CO "hotspots" near sensitive receptors.

Analysis

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, day-care 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-fired particulate matter and CO.

Tierra del Sol

Construction Impacts

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, Tierra del Sol construction traffic would be added to the roadway system in the vicinity of the Tierra del Sol 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 project-specific traffic analysis, it was assumed that no intersections in the vicinity of the Tierra del Sol site would exceed a peak-hour volume of 3,000 vehicles; refer to Section 3.1.7, Traffic and Transportation, for further details. As stated in Section 3.1.7, average daily construction trips associated with the Tierra del Sol solar farm (58 average daily trips (ADT)) would be less than 200 average daily trips and would in turn be less than the established County ADT threshold triggering the preparation of a traffic impact study (TIS); therefore a TIS for the Proposed Project was not prepared. Because a TIS 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, occasional government vehicles, and equestrian farm and ranch workers. Regional travel through the area is provided by State Route 94 (SR-94) and Old Highway 80 however, Interstate 8 (I-8) receives the majority of regional through traffic. Therefore, for purposes of

this analysis and due to both the local character of the project area and the LOS identified on local roadway segments, intersections along the anticipated construction access routes are assumed to be operating at an an acceptable level with little delay.

Mobile source emissions during construction activities would include those from daily construction worker trips to and from the site, material deliveries, on- and off-site construction equipment, concrete trucks, water trucks, and dump trucks hauling materials. Construction traffic would be temporary and short-term in nature, and would occur intermittently throughout the various phases of construction from site grading and tracker installation to the construction of the O&M building and substation. A maximum of 120 construction workers would be required during the peak construction period resulting in approximately 57 trips per day on average. Up to 163 trips per day would be generated during the most intense period of construction. Heavy-duty truck trips associated with soil hauling would not occur because all soil volumes associated with grading would be balanced on site. Because the Tierra del Sol solar farm would be developed in phases, the number of daily construction worker trips traveling to and from the site would be proportionate to the activities occurring on one portion of the solar farm and not the entire site. Therefore, the phased approach to development would limit the daily volume of construction workers on local roads associated with the Tierra del Sol solar farm. Thus, construction-related traffic is not expected to impact local intersections and cause an exceedance of the CO CAAQS. Impacts would be **less than significant**.

Toxic Air Contaminants – Diesel Particulate Matter

Construction of the Tierra del Sol solar farm would result in emissions of diesel particulate matter (DPM) from heavy-duty construction equipment and trucks operating on the 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 reference exposure levels for short-term (acute) exposure to DPM. The nearest sensitive receptors consist of scattered residences located along Tierra del Sol Road and immediately adjacent to the northern and western project limits. The nearest sensitive receptor (single-family residence) is located to the west, approximately 111 feet (34 meters) from the proposed limits of disturbance.

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 ($\mu g/m^3$), breathing rate, and exposure period, and multiplying the dose by the inhalation cancer potency factor, expressed as $(\text{milligrams/kilogram body weight per day})^{-1}$. 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 1.2-year (up to 14 months) exposure scenario, corresponding to the approximate construction period for the solar project, 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 420-acre solar farm site; 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 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 2.2-1. The total pounds of DPM emissions from these sources over the entire construction period were converted to pounds per year by dividing the total by 1.2. Because the sources of DPM would occur throughout the solar farm site, 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 average daily acreage would be 5 acres; thus, a fraction of 5/420 was applied to the total construction DPM emissions. Total emissions of construction-related 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. See Appendix 2.2-1 for model outputs and cancer risk calculations.

Per EPA guidance (EPA 1992), the maximum modeled 1-hour concentration of 0.0969 $\mu g/m^3$ was multiplied by 0.1 to simulate the annual average concentration of 0.0097 $\mu g/m^3$ at the maximally exposed individual (located 100 meters from the volume source).

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 receptors are located approximately 34 meters

from the volume source, the maximum exposure would occur at 100 meters from the volume source representing the construction DPM emissions.

Table 2.2-16, Summary of Maximum Modeled Cancer Risks, shows the maximum modeled annual DPM concentration for the maximally exposed individual and the associated cancer risk. The cancer risk at a sensitive receptor is 0.1 in 1 million which is less than the County significance threshold of 1 in 1 million for cancer 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 $\mu g/m^3$ divided by the reference exposure level (REL), also in units of $\mu g/m^3$. 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.

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 2012c). The chronic non-carcinogenic inhalation hazard index for construction activities was calculated by dividing the modeled annual average concentrations of DPM by its REL, which is 5 $\mu g/m^3$.

Table 2.2-17, Summary of Maximum Chronic Hazard Index, 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 0.0019 which is less than the County significance threshold of 1.0 for noncarcinogenic health impacts.

In summary, the maximum anticipated cancer risk associated with the project is 0.1 in 1 million at maximally exposed sensitive receptors, based on a 1.2-year exposure scenario. The assessment also finds that the chronic hazard index for noncancer health impacts are 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 Tierra del Sol solar farm would be below the County's established thresholds and impacts would be **less than significant**.

Regarding gen-tie line construction, impacts to sensitive receptors during construction of the gen-tie line would be minimal, as construction activities would move in a linear manner along the gen-tie route. No construction activities would occur in one location for an extended period of time. Additionally, the duration of construction for the gen-tie, types of construction activities, and equipment fleet required would be less than that for the solar farm. As such, impacts during construction of the gen-tie line, when combined with anticipated impacts of the solar farm, would be **less than significant**.

Operational Impacts

Carbon Monoxide

Consistent with the County's guidelines, analysis of potential CO hotspots would not be required for the Tierra del Sol solar farm since it does not propose 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 peak-hour trips in the project area or impact roadway intersections. Therefore, the Tierra del Sol solar farm would not have the potential to create a CO hotspot or result in a considerable net increase of CO. Impacts would be **less than significant**.

Toxic Air Contaminants – Diesel Particulate Matter

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 is adopting 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, APCD 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. In addition, Rule 1200 establishes acceptable risk levels and emission control requirements for new and modified facilities that may emit additional TACs. 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. The human health risk analysis is based on the time, duration, and exposures expected. T-BACT would be determined on a case-by-case basis; however, examples of T-BACT include diesel particulate filters, catalytic converters, and selective catalytic reduction technology.

The only stationary sources of TACs associated with the solar farm that would be subject to Rule 1200 would be the emergency generators. The emergency generators would emit DPM, which CARB has designated as a TAC. They would be operated during routine

testing and maintenance, typically for about 1 hour no more often than once a week, and during electrical outages. The emergency generators would be located at the substation, which is approximately 1,750 feet (0.33 mile) from the nearest sensitive receptor. Additionally, the emergency generators would be operated for a limited time, would meet the required emission rates for DPM at the time of installation, and must demonstrate they meet the requirements of Rule 1200 before the SDAPCD can issue an Authority to Construct. As such, the exposure of project-related TAC emission impacts to sensitive receptors during operation of the Proposed Project would be below County thresholds.

The nearest sensitive receptors consist of scattered residences located along the northern limits of Tierra del Sol Road and immediately adjacent to the western project limits. The nearest sensitive receptor is located to the west, approximately 111 feet (34 meters) from the proposed limits of disturbance. As the Tierra del Sol solar farm would consist of construction of trackers and associated infrastructure for the procurement and delivery of renewable energy, the solar farm, by nature, would not generate a significant amount of TACs in the immediate area. Additionally, the Tierra del Sol solar farm would only require three diesel trucks during gen-tie maintenance and inspection. An additional 30 light-duty vehicles would be required for operation and maintenance of the solar farm and gen-tie line including employee commute vehicles, and limited use of personnel transport vehicles, washing vehicles, and a service truck which would not produce substantial emissions. As such, impacts would be **less than significant**.

Rugged

Construction Impacts

Carbon Monoxide

Construction-related vehicle trips associated with the Rugged solar farm include daily construction workers, initial delivery of construction equipment and vehicles, and phased delivery of construction materials, including trackers. Some construction deliveries may require oversized transport vehicles that travel at slower speeds and intrude into adjacent travel lanes. Construction-related traffic is not anticipated to significantly impact the LOS rating due to the limited, intermittent, and temporary nature of construction traffic.

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).

Based on the project-specific traffic analysis, it was assumed that no intersections in the vicinity of the Rugged site would exceed a peak-hour volume of 3,000 vehicles; refer to Section 3.1.7, Transportation and Traffic, for further details. As stated in Section 3.1.7, average daily construction trips associated with the Rugged solar farm (160 average daily trips) would be less than 200 average daily trips and would in turn be less than the established County ADT threshold triggering the preparation of a TIS; therefore a TIS for the Proposed Project was not prepared. Because a TIS 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, occasional government vehicles, and equestrian farm and ranch workers. Regional travel through the area is provided by SR-94 and Old Highway 80 however, I-8 receives the majority of regional through traffic. Therefore, for purposes of this analysis and due to both the local character of the project area and the LOS identified on local roadway segments, intersections along the anticipated construction access routes are assumed to be operating at an an acceptable level with little delay.

Heavy-duty truck trips associated with soil hauling would not occur because all soil volumes associated with grading would be balanced on site. Because the Rugged solar farm would be developed in phases, the number of daily construction worker trips traveling to and from the Rugged site would be proportionate to the activities occurring on one portion of the project, not the entire Rugged site. Depending on the specific stage of construction, an average daily workforce of 60 to 70 workers would be present at the construction site and approximately 160 average daily trips are anticipated. Approximately 392 daily trips would be generated during peak construction traffic periods. Therefore, the staged approach to development would limit the daily volume of construction workers on local roads associated with the Rugged solar farm. Thus, construction-related traffic is not expected to impact local intersections and cause an exceedance of the CO CAAQS. This impact would be **less than significant**.

Toxic Air Contaminants – Diesel Particulate Matter

Construction Equipment and Vehicles

Construction of the Rugged solar farm would result in emissions of DPM from heavy-duty construction equipment and trucks operating on the site (e.g., water trucks). DPM is characterized as a TAC by CARB. The OEHHA has identified carcinogenic and chronic noncarcinogenic effects from long-term (chronic) exposure, but it has not identified reference exposure levels for short-term (acute) exposure to DPM. The nearest sensitive receptors consist of scattered residences located at various locations near the project site. The nearest

sensitive receptor to the project site is located to the west, approximately 350 feet (107 meters) from the southern section of the project site.

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-year (up to 12 months) exposure scenario, corresponding to the approximate construction period for the solar project, 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 765-acre solar farm site; thus, sources of DPM emissions (e.g., heavy-duty construction equipment) would not be concentrated in any one area for the entire construction period.

Similar to the Tierra del Sol solar farm, to estimate the ambient concentrations of DPM resulting from construction activities at the Rugged site 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 2.2-2. The total pounds of DPM emissions from these sources over the entire construction period were converted to pounds per year by dividing the total by 1.2. Because the sources of DPM would occur throughout the solar farm site, 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 average daily acreage would be 5 acres; thus, a fraction of 5/765 was applied to the total construction DPM emissions. Total emissions of construction-related 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. See Appendix 2.2-2 for model outputs and cancer risk calculations.

Per EPA guidance (EPA 1992), the maximum modeled 1-hour concentration of 0.0939 $\mu g/m^3$ was multiplied by 0.1 to simulate the annual average concentration of 0.0094 $\mu g/m^3$ at the maximally exposed individual (located 100 meters from the volume source).

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 receptors are located approximately 107 meters from the volume source, the maximum exposure would occur at 100 meters from the volume source representing the construction DPM emissions.

Table 2.2-18, Summary of Maximum Modeled Cancer Risks, shows the maximum modeled annual DPM concentration for the maximally exposed individual and the associated cancer risk. The cancer risk at a sensitive receptor is less than the County significance threshold of 1 in 1 million for cancer impacts.

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 $\mu g/m^3$ divided by the REL, also in units of $\mu g/m^3$. 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.

In addition to the potential cancer risk, DPM has chronic (i.e., long-term) non-cancer health impacts. The chronic non-cancer inhalation hazard indices for the Rugged solar farm were calculated by dividing the modeled annual average concentrations of DPM by the REL. The OEHHA has recommended an ambient concentration of 5 micrograms per cubic meter ($\mu g/m^3$) as the chronic inhalation REL for DPM. The REL is the concentration at or below which no adverse health effects are anticipated. No inhalation REL for acute (i.e., short-term) effects has been determined by OEHHA. Table 2.2-19 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 0.0019 which is less than the County significance threshold of 1.0 for non-carcinogenic health impacts.

Batch Plant Generators

In addition to DPM emissions from diesel equipment and vehicles, the two diesel generators at the concrete batch plant would emit DPM when operating to power the batch plant. The nearest sensitive receptor to the batch plant is located to the northeast, approximately 3,165 feet from the batch plant. Figure 1-8 shows the location of the batch plant.

Total emissions of engine exhaust PM_{10}, as a surrogate for DPM, during the overall construction period (including several additional months to provide concrete for the Tierra del Sol solar farm) were calculated and then converted to grams per second for use in the SCREEN3 model. The concrete batch plant would operate a total of 14 months (1.2 years) for both the Tierra Del Sol and Rugged projects.

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 965 meters from the batch plant) is shown in Table 2.2-20, Summary of Average DPM Concentrations – Concrete Batch Plant Generators.

The cancer risk calculations were performed by multiplying the predicted annual DPM concentrations from SCREEN3 by the appropriate risk values as described above for the construction health risk calculations. Table 2.2-21, Summary of Maximum Modeled Cancer Risks – Concrete Batch Plant Generators, shows the maximum modeled annual DPM concentration for the maximally exposed individual and the associated cancer risk. The cancer risk at a sensitive receptor is 0.23 in 1 million which is less than the County significance threshold of 1 in 1 million for cancer impacts.

While the sensitive receptors for the cancer risk due to construction equipment and trucks and to the batch plant generators are located in proximity to different portions of the project site, if the separate cancer risks were conservatively added together, they would be 0.27 in 1 million, which is still less than the County significance threshold of 1 in 1 million for cancer impacts.

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 $\mu g/m^3$ divided by the REL, also in units of $\mu g/m^3$. 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.

In addition to the potential cancer risk, DPM has chronic (i.e., long-term) non-carcinogenic health impacts. The chronic hazard index was calculated as described above for the construction health risk calculations. Table 2.2-22, Summary of Maximum Chronic Hazard Index – Concrete Batch Plant Generators, 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, when separate hazard indexes from construction activity and the batch plant generators are conservatively added together, is 0.01, which is less than the County significance threshold of 1.0 for non-carcinogenic health impacts.

In summary, the maximum anticipated cancer risk associated with the solar farm is no greater than 0.27 in 1 million at maximally exposed sensitive receptors. The assessment also finds that the chronic hazard index for non-cancer health impacts are below 1.0 at the maximally exposed individual. As such, the exposure of project-related TAC emission impacts to sensitive receptors during construction would be below County thresholds, and impacts would be **less than significant**.

Operational Impacts

Carbon Monoxide

Consistent with the County's guidelines, analysis of potential CO hotspots would not be required for the Rugged solar farm since it does not propose 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 peak-hour trips in the project area or impact roadway intersections. Therefore, the Rugged solar farm would not have the potential to create a CO hotspot or result in a considerable net increase of CO.

Toxic Air Contaminants – Diesel Particulate Matter

In addition to impacts from criteria pollutants, project impacts may include emissions of pollutants identified by the state and federal government as TACs or 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 is adopting 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, APCD 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 1995). 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.

The nearest sensitive receptors consist of scattered residences located along the western and eastern limits of the project site. The nearest sensitive receptor is located to the west, approximately 350 feet from the proposed limits of disturbance. As the project would consist of construction of trackers and associated infrastructure for the procurement and delivery of renewable energy, the Proposed Project, by nature, would not generate a significant amount of

TACs in the immediate area. Additionally, the solar farm would not require the extensive use of diesel trucks during operation but would include employee commute vehicles, and limited use of personnel transport vehicles, vehicles to tow panel washing equipment (i.e. IPC Eagle Wash Station), and a service truck. The only stationary sources of TACs associated with the solar farm that would be subject to Rule 1200 would be the emergency generators. The emergency generators would emit DPM, which CARB has designated as a TAC. They would be operated during routine testing and maintenance, typically for about 1 hour no more often than once a week, and during electrical outages. The emergency generators would be located at the substation, which is nearly 3,000 feet (0.6 mile) from the nearest sensitive receptor. Additionally, the emergency generators would be operated for a limited time, would meet the required emission rates for DPM at the time of installation, and must be demonstrated to meet the requirements of Rule 1200 before the SDAPCD can issue an Authority to Construct. As such, the exposure of project-related TAC emission impacts to sensitive receptors during operation would not exceed County thresholds, and impacts would be **less than significant**.

LanEast

Construction Impacts

Carbon Monoxide

Vehicle trips from the LanEast site during construction would include daily construction workers, initial delivery of construction equipment and vehicles, and phased delivery of construction materials including solar panels. Some construction deliveries would require oversized transport vehicles that travel at slower speeds and intrude into adjacent travel lanes. Construction-related traffic is not anticipated to significantly impact the LOS rating due to intermittent and temporary nature of construction traffic.

Based on the traffic analysis conducted for the Tierra del Sol and Rugged solar farms which are larger in scale compared to LanEast, it was assumed that no intersections in the vicinity of the LanEast solar farm site would exceed 3,000 peak-hour trips based on traffic volumes estimated for the larger Tierra del Sol and Rugged solar farm projects.

Additionally, no significant soil hauling off-site would be required, as the grading would balance the site. Because the LanEast solar farm would be developed in phases, the number of daily construction worker trips traveling to and from the site would be proportionate to the activities occurring on one portion of the site and not the entire LanEast site. Therefore, the phased approach to development would limit the daily volume of construction workers on local roads associated with the LanEast solar farm. Thus, construction-related traffic is not expected to impact local intersections and cause an exceedance of the CO CAAQS. Impacts would be **less than significant**.

Toxic Air Contaminants – Diesel Particulate Matter

Construction of the LanEast solar farm would result in short-term diesel exhaust emissions from on-site heavy-duty equipment. Particulate exhaust emissions from diesel-fueled engines were identified as a TAC by CARB in 1998. Construction would result in the generation of DPM emissions from the use of off-road diesel construction equipment required for mass site grading and earthmoving, trenching, asphalt paving, and other construction activities. Other construction-related sources of DPM include material delivery trucks and construction worker vehicles. However, not all construction worker vehicles would be diesel-fueled and most DPM emissions associated with material delivery trucks and construction worker vehicles would occur off site.

Generation of DPM from construction projects typically occur in a single area for a short period. The dose (of TACs) to which receptors are exposed to is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure a person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period to a fixed amount of emissions would result in a higher exposure level for the Maximally Exposed Individual (MEI) and higher health risks. According to the OEHHA, health risk assessments, which are the tool used to determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project. The longest period of time that construction activities would occur at a distance reasonably considered to have an effect on a sensitive receptor would be approximately 1 year. Thus, if the duration of potentially harmful construction activities near a sensitive receptor were 1 year, the exposure would be approximately 1% of the total exposure period used for typical health risk calculations (i.e., 70 years).

Because the use of off-road heavy-duty diesel equipment would be temporary, and construction activity associated with LanEast would resemble that of Tierra del Sol on a daily basis, which was found to be less than significant for TACs, construction-related emissions of TACs would not expose sensitive receptors to substantial emissions of TACs. Impacts would be **less than significant**.

Operational Impacts

Carbon Monoxide

CO emissions are the result of the combustion process and therefore primarily associated with mobile source emissions (vehicles). CO concentrations tend to be higher in urban areas where there are many mobile-source emissions. Operational traffic volumes related to maintenance activities would be negligible, which would have a negligible effect on the project signalized intersections LOS. As noted earlier, there are no intersections in the LanEast site that exceed

3,000 vehicle trips during the peak hour based on traffic volumes estimated for the larger Tierra del Sol and Rugged solar farm projects. Traffic volumes would not be anticipated to significantly increase volumes at these intersections.

Furthermore, vehicle emissions are anticipated to decrease in future years due to vehicle fleets continuing to turnover and more stringent vehicle emissions control standards coming into effect. Therefore, the operation of the LanEast solar farm would not expose sensitive receptors to substantially high concentrations of CO or contribute traffic volumes to intersections that would exceed the CO CAAQS; therefore, this impact would be **less than significant**.

Toxic Air Contaminants – Diesel Particulate Matter

Implementation of the LanEast solar farm would require minimal use of diesel trucks and use of emergency generators during project operation, maintenance and inspection. However, these operations would not generate any major operational sources of TAC or DPM. The impact would be **less than significant**.

LanWest

Construction Impacts

Carbon Monoxide

Vehicle trips from the LanWest site during construction include daily construction workers, initial delivery of construction equipment and vehicles, and phased delivery of construction materials, including trackers. Some construction deliveries may require oversized transport vehicles that travel at slower speeds and intrude into adjacent travel lanes. Construction-related traffic is not anticipated to significantly impact the LOS rating due to the limited, intermittent, and temporary nature of construction traffic.

Based on the traffic analysis conducted for the Tierra del Sol and Rugged solar farms which are larger in scale compared to LanEast, it was assumed that no intersections in the vicinity of the LanWest solar farm site would exceed a peak-hour volume of 3,000 vehicles based on traffic volumes estimated for the larger Tierra del Sol and Rugged solar farm projects. Additionally, no significant soil hauling off site would be required, as grading would balance the site. Because the LanWest solar farm would be developed in phases, the number of daily construction worker trips traveling to and from the site would be proportionate to the activities occurring on one portion of the site, not the entire LanWest site, and would not exceed 30 workers at one time. Therefore, the phased approach to development would limit the daily volume of construction workers on local roads associated with the LanWest solar farm. Thus, construction-related traffic is not expected to impact local intersections and cause an exceedance of the CO CAAQS. Impacts would be **less than significant**.

Toxic Air Contaminants – Diesel Particulate Matter

Construction of the LanWest solar farm would result in short-term diesel exhaust emissions from on-site heavy-duty equipment. Particulate matter exhaust emissions from diesel-fueled engines (DPM) were identified as a TAC by CARB in 1998 (CARB 1998). Project construction would result in the generation of DPM emissions from the use of off-road diesel construction equipment required for clearing, grading and any earthmoving, trenching, materials handling and installation, and other construction activities. Other construction-related sources of DPM are material delivery trucks and may include construction worker vehicles. However, not all construction worker vehicles would be diesel-fueled, and most DPM emissions associated with material delivery trucks and construction worker vehicles would occur off site.

Generation of DPM from construction projects typically occurs in a single area for a short period. The dose of TACs receptors are exposed to is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure a person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period to a fixed amount of emissions results in a higher exposure level and higher health risks for the maximally exposed individual. According to the OEHHA's health risk assessments program (OEHHA 2003), which is used to determine the exposure of sensitive receptors to TAC emissions, risk should be based on a 70-year exposure period; however, such assessments can be limited to the period/duration of activities associated with the project. The longest period that construction activities would occur at a distance reasonably considered to have an effect on a sensitive receptor is approximately 1 year. Thus, if the duration of potentially harmful construction activities near a sensitive receptor is 1 year, then the exposure would be approximately 1% of the total exposure period used for typical health risk calculations (i.e., 70 years).

Because the use of off-road heavy-duty diesel equipment would be temporary, and construction activity associated with LanWest would resemble that of Tierra del Sol on a daily basis, which was found to be less than significant for TACs, LanWest solar farm construction-related emissions of TACs would not expose sensitive receptors to substantial emissions of TACs. Therefore, the LanWest solar farm's construction-related TAC impacts to sensitive receptors would be **less than significant**.

Operational Impacts

Carbon Monoxide

CO emissions are the result of the combustion process and, therefore, primarily associated with mobile-source emissions (vehicles). CO concentrations tend to be higher in urban areas where there are many mobile-source emissions. Operational traffic volumes related to maintenance

activities would be not more than approximately eight trips per day, which would have a negligible effect on the LOS at intersections in the project area. As noted earlier, there are no intersections in the project area that exceed 3,000 vehicle trips during the peak hour based on traffic volumes estimated for the larger Tierra del Sol and Rugged solar farm projects. Project-generated trips are not anticipated to significantly increase volumes at these intersections.

Furthermore, vehicle emissions are anticipated to decrease in future years due to vehicle fleets continuing to turnover and more stringent vehicle emissions control standards coming into effect. Therefore, operation of the LanWest solar farm would not expose sensitive receptors to substantially high concentrations of CO or contribute traffic volumes to intersections that would exceed the CO CAAQS; therefore, this impact would be **less than significant**.

Toxic Air Contaminants – Diesel Particulate Matter

Implementation of the LanWest solar farm would require minimal use of diesel trucks and use of emergency generators during solar farm operation, maintenance, and inspection. However, these operations would not generate any major operational sources of TAC or diesel PM. This impact would be **less than significant**.

Proposed Project

Construction Impacts

There are multiple sensitive receptors in the vicinity of the Proposed Project site that are likely to be affected by PM, diesel exhaust, and CO emitted during construction of the Proposed Project.

Carbon Monoxide

Based on the project-specific traffic analysis conducted for the Proposed Project, it was assumed that no intersections near each of the solar farm sites would exceed a peak-hour volume of 3,000 vehicles. As stated in Section 3.1.7, average daily construction trips associated with the Tierra del Sol solar farm (58 average daily trips) and Rugged solar farm (160 average daily trips) would individually be less than 200 average daily trips and would in turn be less than the established County ADT threshold triggering the preparation of a TIS; therefore a TIS for the Proposed Project was not prepared. Because a TIS 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, occasional government vehicles, and equestrian farm and ranch workers. Regional travel through the area is provided by SR-94 and Old Highway 80 however, I-8 receives the majority of regional through traffic. Therefore, for purposes of this analysis and due to both the local

character of the project area and the LOS identified on local roadway segments, intersections along the anticipated construction access routes are assumed to be operating at an acceptable level with little delay.

Mobile source emissions during construction activities would include those from daily construction worker trips to and from the site, material deliveries, on- and off-site construction equipment, concrete trucks, water trucks, and dump trucks hauling materials. Based on the aggregate average number of daily trips generated by construction of the Tierra del Sol and Rugged solar farms, it is estimated that an average of up to 392 daily trips would be generated by construction crews of both the Tierra del Sol and Rugged solar farms. Construction traffic would be temporary and short-term in nature, and would occur intermittently throughout the various phases of construction from site grading and tracker installation to the construction of the O&M building and substation. Soil from both the Tierra del Sol and Rugged sites would be balanced on site; therefore, no heavy truck trips would be associated with soil hauling.

Because the Proposed Project would be developed in phases, the number of daily construction worker trips traveling to and from the Proposed Project site would be proportionate to the activities occurring on one portion of the site and not the entire site. Additionally, the LanEast and LanWest solar farms would occur after construction of both the Tierra del Sol and Rugged solar farms is completed and therefore, the construction traffic associated with all four solar farms development would not be distributed on local area roads during the same time frame. As stated in Section 3.1.7, an average of up to 392 daily trips would be generated by the Tierra del Sol and Rugged solar farm construction activities. Therefore, the phased approach to development would limit the daily volume of construction workers on local roads associated with the Proposed Project.

Additionally, overall construction traffic volumes during the AM Peak Hour would be reduced to approximately 311 trips through implementation of PDF-AQ-2 that would require implementation of a construction worker ridership program to achieve a 30% reduction in single-occupancy vehicle usage. Moreover and as discussed in Section 3.1.7, PDF-TR-1 has been provided and would ensure the safe, efficient movement of traffic through the project area during construction. PDF-TR-2 and PDF-TR-3 have also been provided to ensure that local residents are aware of construction activities and any nuisance construction traffic may have on local traffic movement. PDF-TR-3 would also ensure that access for property owners and tenants along the construction route is maintained during construction activities. Thus, construction-related traffic is not expected to impact local intersections and cause an exceedance of the CO CAAQS. This impact would be **less than significant**.

Toxic Air Contaminants – Diesel Particulate Matter

The maximum anticipated cancer risk associated with the Proposed Project at maximally exposed sensitive receptors based on a short-term construction exposure scenario would be less than significant, as previously discussed. The analysis of the individual sites that comprise the Proposed Project also found that the chronic hazard index for noncancer health impacts are below 1.0 at the maximally exposed individual. DPM generated during project construction activities would be localized to the immediate area of activity on both the Tierra del Sol and Rugged sites, and because construction equipment and vehicles would be moving from one location to the next, no specific construction activity would occur in one location for an extended period of time. Additionally, because the calculated cancer risk and chronic hazard index for non-cancer health impacts at each individual site would be very low, the combined effects of construction DPM generated during construction of the Proposed Project as a whole would be below the County significance thresholds. As such, the exposure of project-related TAC emission impacts to sensitive receptors during construction of the Proposed Project would be **less than significant**.

Additionally, because there wouldn't be a concentration of construction equipment in any one area for an extended period of time, particulate matter and diesel exhaust emissions would be distributed throughout the Proposed Project sites and would, therefore, occur in relatively low concentrations at existing sensitive receptors. As a result, these construction emissions would not be considered significant. Impacts would be **less than significant**.

Operational Impacts

Carbon Monoxide

Consistent with the County's guidelines, analysis of potential CO hotspots would not be required for the Proposed Project since it does not include uses that would significantly contribute to local population or employment growth or congestion on local roadways. Once the Proposed Project is operational, the average number of full-time employees accessing the solar farm sites would range from between approximately 30 to 36 on any given day. Therefore, assuming a worst-case scenario of 36 full-time employees, regular operation of the Proposed Project would generate 72 daily trips. The addition of O&M vehicles would not significantly contribute 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 result in a considerable net increase of CO. Impacts would be **less than significant**.

Toxic Air Contaminants – Diesel Particulate Matter

As the Proposed Project would consist of construction of trackers and associated infrastructure for the procurement and delivery of renewable energy, the Proposed Project,

by 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, and limited use of personnel transport vehicles, washing vehicles, and a service truck.

The only stationary sources of TACs associated with the Proposed Project that would be subject to Rule 1200 would be the emergency generators. The emergency generators would emit DPM, which CARB has designated as a TAC. They would be operated during routine testing and maintenance, typically for about 1 hour no more often than once a week, and during electrical outages. The emergency generators would be located at the substation on the Rugged site, which is nearly 3,000 feet (0.6 mile) from the nearest sensitive receptor. Additionally, the emergency generators would be operated for a limited time, would meet the required emission rates for DPM at the time of installation, and must be demonstrated to meet the requirements of Rule 1200 before the SDAPCD can issue an Authority to Construct.

As such, the exposure of project-related TAC emission impacts to sensitive receptors during operation of the Proposed Project would not exceed County thresholds. Impacts would be **less than significant**.

2.2.3.4 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.

Guidelines for the Determination of Significance

Based on 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. It is generally accepted that the "considerable number of persons" requirement in Rule 51 is normally satisfied when 10 different individuals/households have made separate complaints within 90 days (Smith

2009). The potential for an operation to result in odor complaints from a "considerable" number of persons in the area would 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.

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). APCD 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 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. 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.

Analysis

Tierra del Sol

Construction Impacts

Construction of Tierra del Sol solar farm 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 site depending on where construction activities are occurring, number and types of construction activities occurring, and prevailing weather conditions, among other factors. Sensitive receptors located in the vicinity of the construction site may be affected. The nearest sensitive receptors consist of scattered residences located along Tierra del Sol Road and immediately adjacent to the northern and western Tierra del Sol property line. The nearest sensitive receptor is located to the west, approximately 111 feet (34 meters) from the proposed limits of disturbance. 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 completion; therefore, impacts would be **less than significant**.

Operational Impacts

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 farm would not generate objectionable odors off site, nor would significant odors be generated during operation and maintenance of the facility because it is not associated with the aforementioned land uses and would not propose operational activities that would be commonly associated with substantial odor-generating activities such as fertilizer application for agricultural uses or the treatment of wastewater. Operations that might produce odors would consist of standard service and personnel vehicles which would visit the site regularly during inspection, maintenance, and washing activities. Therefore, operation of the Tierra del Sol solar farm would not create objectionable odors affecting a substantial number of people. Thus, the impacts associated would odors would be **less than significant**.

Rugged

Construction Impacts

Potential sources that may emit odors during construction activities include equipment exhaust including the on-site batch plant. Odors from equipment exhaust would be localized and generally confined to the immediate area surrounding the Rugged site, including the batch plant, and its entry point. The Rugged solar farm would use typical construction techniques, and the odors would be temporary and typical of most construction sites. The Rugged solar farm would not contain any major sources of odor and would not be located in an area with existing odors. The on-site batch plant is not considered an odor-generating use. Therefore, the Rugged solar farm would not create objectionable odors affecting a substantial number of people. Impacts would be **less than significant**.

Operational Impacts

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 farm would not generate objectionable odors off site, nor would significant odors be generated during operation and maintenance of the facility because it is not associated with the aforementioned land uses and would not propose operational activities that would be commonly associated with substantial odor-generating activities, such as fertilizer application for agricultural uses or the treatment of wastewater. As such, a solar farm development would not generate objectionable odors off site, nor would significant odors be generated during operation and maintenance of the facility. Operations that might produce odors would consist

of standard service and personnel vehicles which would visit the site regularly during inspection, maintenance, and washing activities. Therefore, operation of the Rugged solar farm would not create objectionable odors affecting a substantial number of people. Thus, the impacts associated would odors would be **less than significant**.

LanEast

Construction Impacts

Construction of LanEast solar farm would result in the emission of diesel fumes and other odors typically associated with construction activities. Odors from these sources would be localized and generally confined to the immediate area surrounding the LanEast site. These compounds would be emitted in varying amounts on the site depending on where construction activities are occurring, number and types of construction activities occurring, and prevailing weather conditions, among other factors. The LanEast solar farm would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. The LanEast solar farm would not contain any major sources of odor and would not be located in an area with existing odors. Therefore, the LanEast solar farm would not create objectionable odors affecting a substantial number of people. The impact would be **less than significant**.

Operational Impacts

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. As such, a solar farm development would not generate objectionable odors off site, nor would significant odors be generated during operation and maintenance of the facility. Operations would consist of standard service and personnel vehicles which would visit the site regularly during inspection, maintenance, and washing activities. Therefore, operation of the LanEast solar farm would not create objectionable odors affecting a substantial number of people. Thus, the impacts associated would odors would be **less than significant**.

LanWest

Construction Impacts

Construction of LanWest solar farm would result in the emission of diesel fumes and other odors typically associated with construction activities. Odors from these sources would be localized and generally confined to the immediate area surrounding the LanWest site. These compounds would be emitted in varying amounts on the site depending on where construction activities are occurring, number and types of construction activities occurring, and prevailing weather conditions, among

other factors. The LanWest solar farm would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. The LanWest solar farm would not contain any major sources of odor and would not be located in an area with existing odors. Therefore, the LanWest solar farm would not create objectionable odors affecting a substantial number of people. The impact would be **less than significant**.

Operational Impacts

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. As such, a solar farm development would not generate objectionable odors off site, nor would significant odors be generated during operation and maintenance of the facility. Operations would consist of standard service and personnel vehicles which would visit the site regularly during inspection, maintenance, and washing activities. Therefore, operation of the LanWest solar farm would not create objectionable odors affecting a substantial number of people. Thus, the impacts associated would odors would be **less than significant**.

Proposed Project

As previously discussed, due to the nature of the Proposed Project, odor impacts are unlikely. Typical odor nuisances include hydrogen sulfide, ammonia, chlorine, and other sulfide-related emissions. No significant sources of these pollutants would exist during construction, operation, or maintenance activities. An additional potential source of odor is diesel engine emissions. Diesel-powered equipment idling times would be limited to reduce any potential impacts. Odors from these sources would be localized and generally confined to the immediate area surrounding the Proposed Project site. These compounds would be emitted in varying amounts on the site depending on where construction activities are occurring, number and types of construction activities occurring, and prevailing weather conditions, among other factors. As previously discussed, multiple sensitive receptors are located within the Proposed Project area. Construction activities would be short-term and intermittent. Because there would be few sources of odor in proximity to sensitive receptors, and construction would be short-term and localized near these sensitive receptors along the transmission line routes, odor-related impacts would be **less than significant**.

2.2.4 Cumulative Impact Analysis

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 AAQS. 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 project would be considered to have a cumulative impact only if the 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 SDAB, particularly the southeastern corner of the County. Furthermore, the primary air quality impacts of the Proposed Project would occur during construction, since the operational impacts would result from limited vehicle trips for operation, 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 VOC 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 CEQA Guidelines Appendix G:

- The project would 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.

2. 2.4.1 Cumulatively Considerable Net Increase of Criteria Pollutants (Construction)

Guidelines for the Determination of Significance

For the purpose of this EIR, the County's *Guidelines for Determining Significance: Air Quality* (County of San Diego 2007) applies to the cumulative impact analysis. Cumulatively considerable net increases during the construction phase would typically occur if two or more projects near each other are simultaneously under construction. A significant impact would result if:

- 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 2.2-1.

Analysis

The SDAB is currently classified as a nonattainment area for the NAAQS and CAAQS for O_3, which is caused by contributions from O_3 precursors NO_x and VOCs. The SDAB is also classified as a nonattainment area for the CAAQS for PM_{10} and $PM_{2.5}$.

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. As shown in Table 2.2-12, emissions of VOC, CO, PM_{10} and $PM_{2.5}$ would be below the significance levels; however, the threshold for NO_x would be exceeded. Construction would occur in two segments. The first segment would consist of the

construction of the Rugged and Tierra del Sol solar farms, which would be short-term lasting approximately 18 months, during which the majority of pollutants would be emitted, and would not result in long-term construction-related emissions. The second segment would include LanWest and LanEast and would begin construction after completion of the Tierra del Sol and Rugged solar farms. Moreover, emissions of PM_{10}, $PM_{2.5}$, NO_x, and/or VOCs would be localized to the Proposed Project site during construction, as these emissions would not be emitted over long distances. Therefore, construction of the Proposed Project would not result in a cumulatively considerable net increase in criteria pollutants.

Construction of cumulative projects simultaneously with the Proposed Project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance and hauling activities, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials and worker vehicular trips. Fugitive dust (PM_{10} and $PM_{2.5}$) emissions would primarily result from site preparation activities. NO_x and CO emissions would primarily result from the use of construction equipment and motor vehicles, the latter of which would generally be dispersed over a large area where the vehicles are traveling.

The extent to which all reasonably foreseeable cumulative projects and the Proposed Project would result in significant cumulative impacts depends on their proximity and construction time schedules. The Proposed Project would be constructed from 2014 to 2015 and would be constructed concurrently with, and in proximity to, other land use and infrastructure development projects (e.g., wind and solar facilities). PM_{10} emissions for the Proposed Project would exceed the significance threshold, and project design features as described in Section 1.2 have been incorporated as part of project implementation to reduce fugitive dust emissions. Additionally, the Proposed Project would be required to comply with SDAPCD Rule 55 and County Code Section 87.428 regarding fugitive dust emissions. Moreover, compliance with the County Grading Ordinance would ensure dust control measures would be provided to further reduce PM_{10} and $PM_{2.5}$ emissions that may result during construction. However, PM_{10} emissions would still exceed the threshold following implementation of the aforementioned measures. Additionally, NO_x emissions from the Proposed Project would exceed the significance threshold, and project design features for NO_x emissions would not substantially reduce those emissions from the Proposed Project. Accordingly, generation of PM_{10} and NO_x emissions when combined with other cumulative projects, particularly those occurring simultaneously during various construction periods of the Tierra del Sol and Rugged solar farms, would result in a **temporary significant cumulative impact** to air quality **(AQ-CUM-1)**.

Although maximum daily construction pollutant impacts would contribute to a cumulatively considerable impact regarding NO_x and PM_{10} emissions during construction activities, impacts would be temporary, localized to the Proposed Project site and would not be emitted over long

distances. Following completion of Proposed Project construction, all construction-related criteria pollutant impacts would cease.

Regarding VOC, CO and SO_x emissions, it would be speculative to analyze 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**.

2.2.4.2 Cumulatively Considerable Net Increase of Criteria Pollutants (Operation)

Guidelines for the Determination of Significance

The following guideline from the County's *Guidelines for Determining Significance: Air Quality* (County of San Diego 2007) applies to the cumulative impact analysis 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 which would result in a cumulatively considerable net increase of CO.

Analysis

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. Therefore, if a project is consistent with the applicable community and general plans, it would not cause a cumulative contribution to the ambient air quality for O_3 because it does not propose growth-inducing uses that would contribute substantially to local population or employment growth and associated VMT on local roadways. The Proposed Project site is currently designated Rural Lands (RL) with a permitted density of 1 dwelling unit per 80 acres. Existing zoning is General Rural (S92), Limited Agriculture (A70), and General Agriculture (A72). The Proposed Project consists of solar energy development and would consist of approximately 7,290 trackers on 1,473 acres. No residential, commercial, or growth-inducing development is proposed that would substantially increase VMT or emissions associated with mobile sources. The operation of the project would result in a small increase in local employment. As such, the Proposed Project would consist of a less intense land use in terms of mobile source emissions than what is currently allowed under the County General Plan.

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 propose residential, commercial, or other growth-inducing uses that would contribute substantially to local population or employment growth and associated VMT on local roadways, the project's contribution to cumulative operational impacts due to motor vehicles would be minimal. No significant area source emissions generated from landscaping or natural gas use are anticipated, as the O&M building and project substation would not require landscaping or natural gas for operational purposes. 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 below the screening-level thresholds and would not result in a significant increase of O_3 precursors during operation. Similarly, because the Proposed Project would not require substantial operational activities, high traffic generation, or earth-moving and hauling, fugitive dust emissions would be anticipated to be below screening-level thresholds. Thus, the Proposed Project **would not result in a cumulatively considerable contribution** to O_3 concentrations or fugitive dust generation.

Additionally, consistent with the County's guidelines, analysis of potential CO hotspots would not be required for this project since the project does not propose 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 peak-hour trips in the project area or impact roadway intersections. Therefore, the project **would not have the potential to create a CO hotspot or a cumulatively considerable net increase of CO**.

2.2.5 Significance of Impacts Prior to Mitigation

Conformance with the Regional Air Quality Strategy

The Proposed Project site is currently designated Rural Lands (RL) with a permitted density of 1 dwelling unit per 80 acres. Existing zoning is General Rural (S92), Limited Agriculture (A70), and General Agriculture (A72). The Proposed Project consists of solar energy development and would consist of approximately 7,290 trackers on 1,473 acres. No residential, commercial, or growth-inducing development is proposed that would contribute substantially to local population or employment growth and associated VMT on local roadways. The operation of the Proposed Project would result in a small increase in local employment. As such, the Proposed Project would consist of a less intense land use in terms of mobile source emissions than what is currently allowed under the County General Plan.

As the Proposed Project would not contribute to local population growth or substantial employment growth and associated VMT on local roadways, the proposed solar development project is considered accounted for in the RAQS, and the project would not conflict with or obstruct the

implementation with local air quality plans. Impacts for each solar farm individually, as well as the Proposed Project, would be considered **less than significant**.

Conformance to Federal and State Ambient Air Quality Standards

Construction

Daily construction emissions for the Tierra del Sol and Rugged solar farms would not exceed the thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. Construction-related impacts would be **less than significant.** Additionally, **PDF-AQ-1** and **PDF-AQ-2**, as listed in Table 1-10 of Section 1.0, Project Description, will be implemented during construction activities to further reduce NO_x and PM_{10} emissions.

Regarding construction of the LanEast and LanWest solar farms, impacts during construction of the Tierra del Sol and Rugged project sites were found to be below the thresholds; however, the maximum daily emissions were estimated to be close to exceeding significance thresholds. Therefore, because LanEast and LanWest would require similar daily grading activities, it cannot be guaranteed that emissions would be below the thresholds, particularly regarding fugitive dust emissions. Impacts would be considered **potentially significant (AQ-LE-1, AQ-LW-1)**.

Additionally, based on the size of the LanEast and LanWest solar farms in comparison to the Tierra del Sol and Rugged solar farms as previously analyzed, and the activities that would be required for construction, construction-related emissions of VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ are not expected to exceed the County's screening level thresholds. However, site design, construction schedule, and equipment fleet have not yet been determined; therefore, a quantitative analysis cannot be conducted at this time, and there is no guarantee emissions would not exceed County thresholds, particularly regarding PM_{10} and NO_x emissions. Impacts would be considered **potentially significant (AQ-LE-2, AQ-LW-2)**.

The Proposed Project is expected to remain below the daily significance thresholds for criteria air pollutants for VOC, CO, SO_x, and $PM_{2.5}$ during construction. However, construction-related emissions would exceed the thresholds for NO_x and PM_{10} for a brief period during the overlap of construction of the Tierra del Sol grading phase (12/4/2014 – 12/13/2014) and Rugged tracker installation phase (8/27/2014 – 4/16/2015), specifically in the months of October, November, December of 2014, and January of 2015. **PDF-AQ-1** and **PDF-AQ-2** as listed in Table 1-10 of Section 1.0, Project Description, would be implemented as part of the Proposed Project to reduce PM_{10} and NO_xemissions, respectively; however, impacts would remain above the threshold. NO_x and PM_{10} impacts would, therefore, be **potentially significant (AQ-PP-1 and AQ-PP-2)**.

Operation

Daily operational emissions for the Tierra del Sol and Rugged solar farms would not exceed the thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. Although emissions would be below the thresholds, **PDF-AQ-3** will be implemented during project operation which would reduce fugitive dust emissions during operation.

Based on program-level information known about the LanEast and LanWest solar farms, and in comparison to the size and scale of the Tierra del Sol and Rugged solar farms, LanEast and LanWest operational emissions are not expected to exceed the County's screening level thresholds for VOC, NO_x, CO, PM_{10}, and $PM_{2.5}$. However, as previously mentioned, quantification of the impact is based upon a theoretical site design, construction schedule, or equipment fleet. The project has not yet been defined and, therefore, criteria pollutant emissions for the LanEast and LanWest solar farms must be reviewed in a subsequent analysis. As such, it cannot be guaranteed that emissions would be below the thresholds, and impacts would be considered **potentially significant (AQ-LE-3, AQ-LW-3)**.

Operational emission levels would not exceed County thresholds of significance for the Proposed Project. Although emissions would below the thresholds, **PDF-AQ-3** would be implemented to further reduce fugitive dust emissions during project operation. Impacts during operation would be **less than significant**.

Decommissioning Impacts

As with the construction emissions, the emissions resulting from decommissioning of the Tierra del Sol, Rugged, LanEast, and LanWest solar farms, and the Proposed Project, are expected to be below the County's thresholds for criteria pollutants, and impacts would be **less than significant**.

Impacts to Sensitive Receptors

Construction

The maximum anticipated cancer risk associated with the Proposed Project at maximally exposed sensitive receptors based on a short-term construction exposure scenario would be less than significant. The assessments for the Tierra del Sol and Rugged solar farms found that the chronic hazard index for noncancer health impacts are 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**. Additionally, because there wouldn't be a concentration of construction equipment in any one area for an extended period of time, particulate matter and diesel exhaust emissions would be distributed

throughout the Proposed Project sites and would, therefore, occur in relatively low concentrations at existing sensitive receptors. As a result, these construction emissions would not be considered significant. Impacts for each solar farm individually, as well as the Proposed Project, would be **less than significant**.

Operation

Consistent with the County's guidelines, analysis of potential CO hotspots would not be required for the Proposed Project since the 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 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 result in a considerable net increase of CO. Impacts for the Tierra del Sol, Rugged, LanEast, and LanWest solar farms, and the Proposed Project, would be **less than significant**.

As the Proposed Project would consist of construction of trackers and associated infrastructure for the procurement and delivery of renewable energy, the Proposed Project, by 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, and limited use of personnel transport vehicles, washing vehicles, and a service truck. The only stationary sources of TACs associated with the Proposed Project that would be subject to Rule 1200 would be the emergency generators. The emergency generators would emit DPM, which CARB has designated as a TAC. They would be operated during routine testing and maintenance, typically for about 1 hour no more often than once a week, and during electrical outages. The emergency generators would be located at the substation, which is nearly 3,000 feet (0.6 mile) from the nearest sensitive receptor. Additionally, the emergency generators would be operated for a limited time, would meet the required emission rates for DPM at the time of installation, and must be demonstrated to meet the requirements of Rule 1200 before the SDAPCD can issue an Authority to Construct. Impacts for the Tierra del Sol, Rugged, LanEast, and LanWest solar farms, and the Proposed Project, would be **less than significant**.

Odor Impacts

Due to the nature of the Proposed Project, odor impacts are unlikely. Typical odor nuisances include hydrogen sulfide, ammonia, chlorine, and other sulfide-related emissions. No significant sources of these pollutants would exist during construction, operation, or maintenance activities. Because there would be few sources of odor in proximity to sensitive receptors, and construction would be short-term and localized near these sensitive receptors along the transmission line

routes, odor-related impacts for the Tierra del Sol, Rugged, LanEast, and LanWest solar farms, and the Proposed Project, would be **less than significant**.

Cumulatively Considerable Impacts

Construction

PM_{10} emissions would be close to exceeding the threshold. The NO_x emissions from the Proposed Project would exceed the significance threshold, and project design features for NO_x emissions would not substantially reduce those emissions from the Proposed Project. Accordingly, generation of these criteria pollutant emissions, when combined with other cumulative projects, particularly those occurring simultaneously during various construction periods of the Tierra del Sol and Rugged projects, **would result in a temporary significant cumulative impact** to air quality **(AQ-CUM-1)**.

Operation

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 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 considerable contribution** to O_3 concentrations.

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

2.2.6 Mitigation Measures

In order to verify air quality impacts would not exceed that allowed under the County of San Diego/SDAPCD thresholds during construction of the LanWest and LanEast solar farms, the following mitigation measures would be implemented, which would address impacts **AQ-LE-1** through **AQ-LE-3** and **AQ-LW-1** through **AQ-LW-3**:

M-AQ-LE-1 During site grading activities for the LanEast site, grading will be limited to no more than 5 acres per day.

M-AQ-LW-1 During site grading activities for the LanWest site, grading will be limited to no more than 5 acres per day.

M-AQ-LE-2 Prior to issuance of Major Use Permits for the LanEast solar farm, a site-specific air quality technical report will be prepared and approved by the County, which will verify compliance with County and San Diego Air Pollution Control District standards during construction and operation of the solar farm. The site-specific technical report will be prepared in accordance with County report format and content requirements, and the report will be completed and approved by the County prior to certification of the project-level CEQA document.

Project design features PDF-AQ-1 through PDF-AQ-3 as delineated in the Tierra del Sol solar farm and Rugged solar farm technical reports and as listed in Table 1-10 of Section 1.0, Project Description, will be incorporated into the LanEast technical report, and will be implemented during construction and operation of these projects. PDF-AQ-1 requires implementation of dust control measures during construction activities; PDF-AQ-2 requires a worker ridesharing program to be implemented to reduce single passenger trips from construction worker trips by 30%; and PDF-AQ-3 requires dust control measures during project operation.

M-AQ-LW-2 Prior to issuance of Major Use Permits for the LanWest solar farm, a site-specific air quality technical report will be prepared and approved by the County, which will verify compliance with County and San Diego Air Pollution Control District standards during construction and operation of the solar farm. The site-specific technical report will be prepared in accordance with County report format and content requirements, and the report will be completed and approved by the County prior to certification of the project-level CEQA document.

Project design features PDF-AQ-1 through PDF-AQ-3 as delineated in the Tierra del Sol solar farm and Rugged solar farm technical reports and as listed in Table 1-10 of Section 1.0, Project Description, will be incorporated into the LanWest technical report, and will be implemented during construction and operation of these projects. PDF-AQ-1 requires implementation of dust control measures during construction activities; PDF-AQ-2 requires a worker ridesharing program to be implemented to reduce single passenger trips from construction worker trips by 30%; and PDF-AQ-3 requires dust control measures during project operation.

The Proposed Project would result in a significant impact regarding NOx emissions during construction activities (**AQ-PP-1**); therefore, Mitigation Measure **M-AQ-PP-1** is provided.

M-AQ-PP-1 The Applicant shall implement the following measures to reduce NO_x emissions during construction of the Proposed Project:

- All equipment with engines meeting the requirements above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.
- Construction equipment will employ electric motors when feasible.
- No mobile or portable construction equipment over 50 horsepower shall use engines certified as meeting CARB or EPA Tier 1 standards. All engines shall comply preferably with Tier 3 standards, but no less than Tier 2 at a minimum.

The Proposed Project would result in a significant impact regarding PM_{10} emissions during construction activities (**AQ-PP-2**); however, no additional mitigation is available to reduce PM_{10} impacts beyond PDFs listed in Table 1-10 of Section 1.0, Project Description.

No mitigation beyond those stated above are available to reduce impact **AQ-CUM-1**.

2.3.7 Conclusion

The following discussion provides a synopsis of the conclusion reached in each of the above impact analyses, and the level of impact that would occur after mitigation measures are implemented.

Conformance with the Regional Air Quality Strategy

The Tierra del Sol, Rugged, LanEast and LanWest solar farms, and the Proposed Project would not contribute to local population growth or substantial employment growth and associated VMT on local roadways. The Proposed Project is considered accounted for in the RAQS. As such, the project would not conflict with or obstruct the implementation with local air quality plans. Impacts would be considered **less than significant**.

Conformance to Federal and State Ambient Air Quality Standards

Construction

Daily construction emissions for the Tierra del Sol and Rugged solar farms would not exceed the thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. Construction-related impacts would be **less than significant.** Additionally, **PDF-AQ-1** and **PDF-AQ-2**, as listed in Table 1-10 of Section

1.0, Project Description, will be implemented during construction activities to further reduce NO_x and PM_{10} emissions.

Regarding construction of the LanEast and LanWest solar farms, impacts during construction of the Tierra del Sol and Rugged project sites were found to be below the thresholds; however, the maximum daily emissions were estimated to be close to exceeding significance thresholds. Therefore, because LanEast and LanWest would require similar daily grading activities, it cannot be guaranteed that emissions would be below the thresholds, particularly regarding fugitive dust emissions. Impacts would be considered potentially significant (**AQ-LE-1, AQ-LW-1**). In order to reduce fugitive dust emissions during construction of the LanEast site which would verify emissions would not exceed thresholds, Mitigation Measures **M-AQ-LE-1** and **M-AQ-LW-1** are provided. Mitigation Measures **M-AQ-LE-1** and **M-AQ-LW-1** would reduce impacts associated with fugitive dust to a level that is **less than significant**.

Additionally, based on the size of the LanEast and LanWest solar farms in comparison to the Tierra del Sol and Rugged solar farms as previously analyzed, and the activities that would be required for construction, construction-related emissions of VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ are not expected to exceed the County's screening level thresholds. However, site design, construction schedule, and equipment fleet has not yet been determined; therefore, a quantitative analysis cannot be conducted at this time, and there is no guarantee emissions would not exceed County thresholds, particularly regarding PM_{10} and NO_x emissions. Impacts would be considered potentially significant (**AQ-LE-2, AQ-LW-2**). In order to verify air quality impacts would not exceed that allowed under the County of San Diego/SDAPCD thresholds, Mitigation Measures **M-AQ-LE-2** and **M-AQ-LW-2** would be implemented, and impacts would be reduced to a level that is **less than significant**.

The Proposed Project is expected to remain below the daily significance thresholds for criteria air pollutants for VOC, CO, SO_x, and $PM_{2.5}$ during construction. However, construction-related emissions would exceed the thresholds for NO_x and PM_{10} for a brief period during the overlap of construction of the Tierra del Sol grading phase (10/4/2014 – 12/13/2014) and Rugged tracker installation phase (8/27/2014 – 4/16/2015), specifically in the months of October, November, December of 2014, and January of 2015. **PDF-AQ-1** and **PDF-AQ-2** as listed in Table 1-10 of Section 1.0, Project Description, would be implemented as part of the Proposed Project to reduce PM_{10} and NO_x emissions; however, impacts would remain above the threshold. NO_x and PM_{10} impacts would, therefore, be potentially significant (**AQ-PP-1** and **AQ-PP-2**). **M-AQ-PP-1** would be implemented to further reduce NO_x emissions; however, NO_x impacts would not be reduced to a less-than-significant level. No additional mitigation beyond PDFs as listed in Table 1-10 of Section 1.0, Project Description, is available to reduce PM_{10} emissions. As such, impacts regarding NO_x and PM_{10} emissions during construction activities would be **significant and unavoidable**.

Operation

Daily operational emissions for the Tierra del Sol and Rugged solar farms would not exceed the thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. Although emissions would be below the thresholds, **PDF-AQ-3** will be implemented during project operation which would reduce fugitive dust emissions during operation.

Based on program-level information known about the LanEast and LanWest solar farms, and in comparison to the size and scale of the Tierra del Sol and Rugged solar farms, LanEast and LanWest operational emissions are not expected to exceed the County's screening level thresholds for VOC, NO_x, CO, PM_{10}, and $PM_{2.5}$. However, as previously mentioned, quantification of the impact is based upon a theoretical site design, construction schedule, or equipment fleet. The project has not yet been defined and, therefore, criteria pollutant emissions for the LanEast and LanWest solar farms must be reviewed in a subsequent analysis. As such, it cannot be guaranteed that emissions would be below the thresholds, and impacts would be considered **potentially significant (AQ-LE-3, AQ-LW-3)**. In order to verify air quality impacts would not exceed that allowed under the County of San Diego/SDAPCD thresholds, Mitigation Measures **M-AQ-LE-2** and **M-AQ-LW-2**, which call for the preparation of site-specific air quality technical reports, would be implemented. Therefore, operational impacts would be **less than significant**.

Operational emission levels would not exceed County thresholds of significance for the Proposed Project. Although emissions would below the thresholds, **PDF-AQ-3** would be implemented to further reduce fugitive dust emissions during project operation. Impacts during operation would be **less than significant**.

Decommissioning Impacts

As with the construction emissions, the emissions resulting from decommissioning of the Tierra del Sol, Rugged, LanEast, and LanWest solar farms, and the Proposed Project, are expected to be below the County's thresholds for criteria pollutants, and impacts would be **less than significant**.

Impacts to Sensitive Receptors

The chronic hazard index for noncancer health impacts would be below 1.0 at the maximally exposed individual for the Tierra del Sol, Rugged, LanEast and LanWest solar farms, and the Proposed Project; therefore, the exposure of project-related TAC emission impacts to sensitive receptors during construction would be **less than significant**. Additionally, because there wouldn't be a concentration of construction equipment in any one area for an extended period of time, particulate matter and diesel exhaust emissions would be distributed throughout the Proposed Project sites and would, therefore, occur in relatively low concentrations at existing sensitive receptors. As a result, these construction emissions would not be considered significant. Impacts would be **less than significant**.

The addition of O&M vehicles would not significantly contribute 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 result in a considerable net increase of CO. Impacts would be **less than significant**. Additionally, the Proposed Project would not require the extensive use of diesel trucks during operation but would include employee commute vehicles, and limited use of personnel transport vehicles, washing vehicles, and a service truck. The only stationary sources of TACs associated with the project that would be subject to Rule 1200 would be the emergency generators. The emergency generators would emit DPM, which CARB has designated as a TAC. They would be operated during routine testing and maintenance, typically for about 1 hour no more often than once a week, and during electrical outages. The emergency generators would be located at the substation, which is nearly 3,000 feet (0.6 mile) from the nearest sensitive receptor. Additionally, the emergency generators would be operated for a limited time, would meet the required emission rates for diesel particulate matter at the time of installation, and must be demonstrated to meet the requirements of Rule 1200 before the SDAPCD can issue an Authority to Construct. Impacts would be **less than significant**.

Odor Impacts

Due to the nature of the Proposed Project, odor impacts are unlikely. Typical odor nuisances include hydrogen sulfide, ammonia, chlorine, and other sulfide-related emissions. No significant sources of these pollutants would exist during construction, operation, or maintenance activities. Because there would be few sources of odor in proximity to sensitive receptors, and construction would be short term and localized near these sensitive receptors along the transmission line routes, odor-related impacts would be **less than significant**.

Cumulatively Considerable Impacts

Due to the large number of heavy-duty vehicle trips and off-road construction equipment operations required during construction, no feasible mitigation is available to reduce significant cumulatively considerable increases in NO_x and PM_{10} emissions (**AQ-CUM-1**) to below a level of significance. Mitigation Measures **M-AQ-LE-1**, **M-AQ-LW-1**, **M-AQ-LE-2**, **M-AQ-LW-2**, and **M-AQ-PP-1** as described in Section 2.2.6 were considered for the Proposed Project to reduce fugitive dust and NO_x emissions. No additional mitigation measures are available to reduce fugitive dust and NO_x emissions. As such, impacts would be considered **cumulatively considerable** and **unavoidable** during the short-term construction period.

During Proposed Project operations, 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 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. Also, the addition of O&M vehicles would not

significantly contribute peak-hour trips in the project area or impact roadway intersections. Therefore, the project **would not have the potential to create a CO hotspot or a cumulatively considerable net increase of CO**.

Table 2.2-1
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
Pb	Attainment	Attainment
Sulfates	(no federal standard)	Attainment
Hydrogen Sulfide	(no federal standard)	Unclassified
Visibility	(no federal standard)	Unclassified

Sources: [a]EPA 2013; [b]CARB 2013a.

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 State Implementation Plans.

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.

Table 2.2-2
Ambient Air Quality Data (ppm unless otherwise indicated)

Pollutant	Averaging Time	2008	2009	2010	2011	2012	Most Stringent Ambient Air Quality Standard	Monitoring Station
O_3	8-hour	0.110	0.098	0.088	0.093	0.084	0.070	Alpine – Victoria Drive
	1-hour	0.139	0.119	0.105	0.114	0.101	0.090	
PM_{10}	Annual	27.3 µg/m³	25.3 µg/m³	21.3 µg/m³	23.7 µg/m³	23.4 µg/m³	20 µg/m³	El Cajon – Redwood Avenue
	24-hour	41.4 µg/m³	57.0 µg/m³	42.0 µg/m³	41.9 µg/m³	47.2 µg/m³	50 µg/m³	
$PM_{2.5}$	Annual[1]	14.0 µg/m³	12.2 µg/m³	10.8 µg/m³	10.6 µg/m³	NA	12 µg/m³	Alpine – Victoria Drive
	24-hour	37.3 µg/m³	29.7 µg/m³	23.4 µg/m³	25.5 µg/m³	25.5 µg/m³	35 µg/m³	
NO_2	Annual	0.008	0.008	0.007	0.006	NA	0.030	Alpine – Victoria Drive
	1-hour	0.047	0.056	0.052	0.040	0.047	0.180	

Table 2.2-2
Ambient Air Quality Data (ppm unless otherwise indicated)

Pollutant	Averaging Time	2008	2009	2010	2011	2012	Most Stringent Ambient Air Quality Standard	Monitoring Station
CO	8-hour[2]	1.87	1.43	1.56	1.46	1.85	9.0	Chula Vista
	1-hour*	3.0	2.0	2.0	1.7	2.2	20	
SO_2	Annual	0.002	0.002	0.001	0.002	NA	0.030	Chula Vista
	24-hour	0.004	0.003	0.002	NA	NA	0.040	

Sources: CARB 2013b; EPA 2012b.
Data represent maximum values.
Notes: A new 1-hour NAAQS for NO_2 became effective in April 2010. Data reflect compliance with the 1-hour CAAQS.
* Data were taken from EPA 2012b.
1 2009, 2010, and 2011 data were taken from El Cajon – Redwood Avenue monitoring station.
2 2011 data were taken from El Cajon – Redwood Avenue monitoring station.

Table 2.2-3
Frequency of Air Quality Standard Violations

Monitoring Site	Year	Number of Days Exceeding Standard				
		State 1-Hour O_3	*State 8-Hour O_3*	*National 8-Hour O_3*	*State 24-hour PM_{10}**	*National 24-hour $PM_{2.5}$**
Alpine – Victoria Drive	2008	13	61	31	—	—
	2009	6	43	22	—	—
	2010	4	20	12	—	—
	2011	4	30	10	—	—
	2012	1	22	7	—	—
El Cajon – Redwood Avenue	2008	—	—	—	—	—
	2009	—	—	—	6.0 (1)	3.0 (1)
	2010	—	—	—	—	—
	2011	—	—	—	—	1.0 (1)
	2012	—	—	—	—	—

Source: CARB 2013b.
* 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.

Table 2.2-4
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)	

Table 2.2-4
Ambient Air Quality Standards

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

ppm= parts per million by volume μg/m^3 = micrograms per cubic meter mg/m^3= milligrams per cubic meter

Source: CARB 2013c

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.

Table 2.2-5
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			
	Total Emissions		
Pollutant	*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

Source: SDAPCD Rules 1501 and 20.2(d)(2).

* 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.

Table 2.2-6
Tierra del Sol Construction Schedule

Project Activity	Working Days[1]	Start	End
Mobilization	5	9/29/2014	10/3/2014
Clear and Grub	50	10/4/2014	12/2/2014
Grading and Roads	8	12/4/2014	12/13/2014
Gen-Tie	60	7/10/2014	9/17/2014
Substation	25	10/10/2014	11/7/2014
Underground Electrical	100	11/1/2014	2/25/2015
O&M Building	80	4/22/2015	7/23/2015
30 MW			
Tracker Installation	120	11/8/2014	3/27/2015
Phase 1 (10 MW)	40	11/8/2014	12/24/2014
Phase 2 (10 MW)	40	12/24/2014	2/7/2015
Phase 3 (10 MW)	40	2/10/2015	3/27/2015
Punch List and Cleanup	20	3/28/2015	4/20/2015
Total Months (30 MW)	6.7		
15 MW			
Tracker Installation	40	7/27/2015	9/10/2015
15 MW			
Tracker Installation	40	10/12/2015	11/26/2015
Total Months (60MW + Gen-Tie)	14		

Note: [1] Working days during construction period = 6 days/week

Table 2.2-7
Tierra del Sol – Estimated Daily Maximum Construction Emissions (pounds per day)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2014	15.45	247.16	107.69	0.46	75.50	21.99
2015	7.24	93.85	59.53	0.23	5.29	3.67
Maximum Daily Emissions	*15.45*	*247.16*	*107.69*	*0.46*	*75.50*	*21.99*
Pollutant Threshold	*75*	*250*	*550*	*250*	*100*	*55*
Threshold Exceeded?	No	No	No	No	No	No

Sources: OFFROAD2007 (CARB 2006); OFFROAD2011 (CARB 2011a); EMFAC 2011 (CARB 2011b); EPA 2011. See Appendix 2.2-1 for complete results.
VOC = volatile organic compounds; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter

Table 2.2-8
Tierra del Sol – Estimated Daily Maximum Operational Emissions (pounds per day)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Solar Farm						
Worker Vehicles	0.23	0.22	2.19	0.00	0.15	0.05
Personnel Transport Vehicles	0.01	0.09	0.01	0.00	0.01	0.00
Washing Vehicles	0.01	0.04	0.17	0.00	0.01	0.00
Satellite Washing Vehicles	0.01	0.09	0.01	0.00	0.01	0.00
Service Trucks	0.00	0.05	0.01	0.00	0.00	0.00
Emergency Generators	1.02	19.30	11.01	0.02	0.63	0.62
Gen-Tie Line						
Pole/Structure Brushing	0.12	1.10	0.11	0.00	0.08	0.02
Herbicide Application	0.12	1.10	0.11	0.00	0.08	0.02
Equipment Repair	0.15	1.47	0.15	0.00	0.10	0.03
Equipment Repair	0.10	0.45	2.08	0.00	0.08	0.04
Helicopter Inspection	0.99	11.89	19.09	1.08	0.00	0.00
Maximum Daily Emissions	2.75	34.05	36.67	1.12	1.14	0.80
Pollutant Threshold	*75*	*250*	*550*	*250*	*100*	*55*
Threshold Exceeded?	No	No	No	No	No	No

Source: EMFAC2011 (CARB 2011b). See Appendix 2.2-1 for complete results.
VOC = volatile organic compounds; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter

Table 2.2-9
Rugged Construction Schedule

Project Activity	Working Days[1]	Start	End
80 MW			
Mobilization	7	7/1/2014	7/8/2014
Clear and Grub	60	7/10/2014	9/18/2014
Grading/Road Construction	9	9/20/2014	9/29/14
Underground Electric	100	10/2/2014	1/26/2015
Substation	35	7/17/2014	8/26/2014
O&M Building	60	11/28/2014	2/5/2015
Tracker Installation	200	8/27/2014	4/16/2015
Phase 1 (24 MW)	60	8/27/2014	11/4/2014
Phase 2 (16 MW)	40	11/5/2014	12/20/2014
Phase 3 (24 MW)	60	12/22/2014	2/28/2015
Phase 4 (16 MW)	40	3/2/2014	4/16/2015
Punch List and Cleanup	60	4/22/2015	6/30/2015
Total Months (80 MW)	12		

[1] Working days during construction period = 6 days/week

Table 2.2-10
Rugged – Estimated Daily Maximum Construction Emissions (pounds per day)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2014	17.94	248.95	127.07	0.46	98.53	26.64
2015	14.26	177.05	107.48	0.38	26.09	9.97
Maximum Daily Emissions	*17.94*	*248.95*	*127.07*	*0.46*	*98.53*	*26.64*
Pollutant Threshold	*75*	*250*	*550*	*250*	*100*	*55*
Threshold Exceeded?	No	No	No	No	No	No

Sources: OFFROAD2007 (CARB 2006); OFFROAD2011 (CARB 2011a); EMFAC2011 (CARB 2011b); EPA 2011. See Appendix 2.2-2 for complete results.
VOC = volatile organic compounds; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter

Table 2.2-11
Rugged – Estimated Daily Maximum Operational Emissions (pounds per day)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Solar Farm						
Worker Vehicles	0.66	6.27	0.63	0.01	0.43	0.13
Personnel Transport Vehicles	0.01	0.09	0.01	0.00	0.01	0.00
Washing Vehicles	0.01	0.04	0.17	0.00	0.01	0.00
Satellite Washing Vehicles	0.01	0.09	0.01	0.00	0.01	0.00
Service Trucks	0.00	0.05	0.01	0.00	0.00	0.00
Emergency Generators	1.02	19.30	11.01	0.02	0.63	0.62
Maximum Daily Emissions	*1.71*	*25.84*	*11.84*	*0.03*	*1.09*	*0.75*
Pollutant Threshold	*75*	*250*	*550*	*250*	*100*	*55*
Threshold Exceeded?	No	No	No	No	No	No

Source: EMFAC2011 (CARB 2011b). See Appendix 2.2-2 for complete results.
VOC = volatile organic compounds; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter

Table 2.2-12
Proposed Project – Maximum Estimated Daily Construction Emissions

Project	Pounds per Day					
	VOC	*NO_x*	*CO*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Tierra del Sol – Grading Phase or Clear/Grub	15.45	247.16	107.69	0.46	75.50	21.99
Rugged – Tracker Installation Phase	14.87	189.10	111.96	0.38	26.49	10.38
Total Daily Emissions	*30.32*	*436.26*	*219.65*	*0.84*	*101.99*	*32.37*
Significance Criteria	*75*	*250*	*550*	*250*	*100*	*55*
Exceeds Threshold?	No	Yes	No	No	Yes	No

Note: The table shows the maximum daily emissions for each criteria pollutant, which generally occur during the Tierra del Sol grading phase and the Rugged tracker installation phase which occur concurrently. Therefore, these two construction phases were aggregated to represent maximum daily construction emissions, except for PM_{10} and $PM_{2.5}$. Maximum daily emissions for PM_{10} and $PM_{2.5}$ would occur during the Tierra del Sol clearing/grubbing phase and the Rugged tracker installation phase. Therefore, these two construction phases were aggregated to represent maximum daily construction fugitive dust emissions.
VOC = volatile organic compounds; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter

Table 2.2-13
Tierra del Sol – Estimated Daily Maximum Construction Emissions (pounds per day)

Construction Phase	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2014						
Mobilization and Clean Up (9/29/2014 – 10/3/2014)	0.21	2.53	2.25	0.00	0.17	0.16
Clearing/Grubbing/Grinding (10/4/2014 – 12/2/2014)	1.94	28.18	17.67	0.04	1.32	2.56
Grading/Road Construction (12/4/2014 – 12/13/2014)	4.13	61.71	28.06	0.07	2.78	2.56
Fugitive Dust	—	—	—	—	65.52	13.68
Underground Electrical Install (11/12014 – 2/25/2015)	0.42	5.07	4.50	0.01	0.34	0.32
Tracker Installation - 30 MW (11/8/2014 – 3/27/2015)	3.41	48.79	31.43	0.10	2.45	2.25
Substation Construction (10/10/2014 - 11/7/2014)	0.91	12.33	8.34	0.02	0.63	0.58
Gen-Tie Line (7/10/2014 – 9/17/2014)	4.48	63.63	39.11	0.09	3.02	2.78
On-Road Vehicles	7.48	131.60	43.71	0.28	6.01	3.28
2014 Maximum Daily Emissions (max daily emissions for the entire TDS solar farm)[1]	15.45	247.16	107.69	0.46	75.50	21.99
2015						
Underground Electrical Install (11/12014 – 2/25/2015)	0.42	4.93	4.46	0.01	0.33	0.31
Tracker Installation - 30 MW (11/8/2014 – 3/27/2015)	3.38	47.18	31.21	0.10	2.38	2.19

Table 2.2-13
Tierra del Sol – Estimated Daily Maximum Construction Emissions (pounds per day)

Construction Phase	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Tracker Installation (15 MW) (7/27/2015 – 9/10/2015)	3.38	47.18	31.21	0.10	2.38	2.19
Tracker Installation (15 MW) (10/12/2015 - 11/26/2015)	3.38	47.18	31.21	0.10	2.38	2.19
O&M Building Construction (4/22/2015 – 7/23/2015)	0.79	10.29	5.18	0.02	0.55	0.51
On-Road Vehicles	3.70	41.74	26.73	0.12	2.78	1.21
2015 Maximum Daily Emissions[1]	7.24	93.85	59.53	0.23	5.29	3.67
Maximum Daily Emissions	*15.45*	*247.16*	*107.69*	*0.46*	*75.50*	*21.99*
Screening Level Threshold	75	250	550	250	100	55
Significant Impact?	No	No	No	No	No	No

Source: Estimated by Dudek in 2013, see Appendix 2.2-1.
Notes: Maximum daily emissions represent overlapping construction phases that would result in the high level of emission for a specific day.
[1] Because not all construction phases occur concurrently, maximum daily emissions are not an aggregate of all construction phases shown in the table.
VOC = volatile organic compounds; NOX = oxides of nitrogen; CO = carbon monoxide; SO2 = sulfur dioxide; PM10 = suspended particulate matter; PM2.5 = fine particulate matter

Table 2.2-14
Rugged – Estimated Daily Maximum Construction Emissions (pounds per day)

Construction Phase	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2014						
Mobilization (7/1/2014 – 7/8/2014)	0.35	4.22	3.75	0.01	0.29	0.26
Clearing/Grubbing/Grinding (7/10/2014 – 9/18/2014)	1.94	28.18	17.67	0.04	1.32	1.21
Grading/Road Construction (9/20/2014 – 9/29/2014)	4.70	68.47	34.06	0.08	3.24	2.98
Fugitive Dust	—	—	—	—	70.02	14.62
Underground Electrical Install (10/2/2014 – 1/26/2015)	2.42	34.59	21.12	0.06	1.70	1.56
Tracker Installation (8/27/2014 – 4/16/2015)	4.64	63.60	40.27	0.12	3.34	3.07
Substation (7/17/2014 – 8/26/2014)	0.91	12.33	8.34	0.02	0.63	0.58
O&M Building Construction (11/28/2014 – 2/5/2015)	0.81	10.55	5.31	0.02	0.56	0.52
On-Road Vehicles	7.00	105.46	44.90	0.24	5.02	2.70
Concrete Batch Plant (7/10/2014 – 4/16/2015)	1.60	11.42	7.84	0.01	16.91	3.26
2014 Maximum Daily Emissions (max daily emissions for entire Rugged solar farm)[1]	17.94	248.95	127.07	0.46	98.53	26.64

Table 2.2-13
Tierra del Sol – Estimated Daily Maximum Construction Emissions (pounds per day)

Construction Phase	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2015						
Underground Electrical Install (10/2/2014 – 1/26/2015)	2.40	33.74	20.84	0.06	1.70	1.53
Tracker Installation (8/27/2014 – 4/16/2015)	4.58	61.57	39.90	0.12	3.25	2.99
O&M Building Construction (11/28/2014 – 2/5/2015)	0.79	10.29	5.18	0.02	0.55	0.51
On-Road Vehicles	5.36	60.48	38.15	0.18	3.98	1.78
Concrete Batch Plant (7/10/2014 - 4/16/2015)	1.60	11.42	7.84	0.01	16.91	3.26
2015 Maximum Daily Emissions[1]	14.26	177.05	107.48	0.38	26.09	9.97
Maximum Daily Emissions	*16.73*	*221.27*	*121.40*	*0.41*	*97.74*	*26.07*
Screening Level Threshold	75	250	550	250	100	55
Significant Impact?	No	No	No	No	No	No

Source: Estimated by Dudek in 2013, see Appendix 2.2-2.
Notes: Maximum daily emissions represent overlapping construction phases that would result in the high level of emission for a specific day.
[1] Because not all construction phases occur concurrently, maximum daily emissions are not an aggregate of all construction phases shown in the table.
VOC = volatile organic compounds; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter

Table 2.2-15
Proposed Project – Estimated Daily Operations and Maintenance Emissions

Project	Pounds per Day					
	VOC	*NO_x*	*CO*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*
Tierra del Sol	2.75	34.05	36.67	1.12	1.14	0.80
Rugged	1.71	25.84	11.84	0.03	1.09	0.75
Total Daily Emissions	4.46	59.89	48.51	1.15	2.23	1.55
Significance Criteria	75	250	550	250	100	55
Exceeds Threshold?	No	No	No	No	No	No

Note: Total daily emissions of the Proposed Project account for the maximum daily operational emissions of the Tierra del Sol, Rugged, LanEast, and LanWest solar farms that would occur concurrently.
VOC = volatile organic compounds; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter

Table 2.2-16
Tierra del Sol – Summary of Maximum Modeled Cancer Risks

Receptor	DPM Annual Concentration µg/m³	Cancer Risk
Maximally Exposed Individual – Residential	0.0097	0.1 in 1 million

Source: SCREEN3 Model results. See Appendix 2.2-1 for complete results.

Table 2.2-17
Tierra del Sol – Summary of Maximum Chronic Hazard Index

Receptor	DPM Concentration μg/m³	Chronic Hazard Index
Maximally Exposed Individual – Residential	0.0097	0.0019

Source: SCREEN3 Model results. See Appendix 2.2-1 for complete results.

Table 2.2-18
Rugged – Summary of Maximum Modeled Cancer Risks

Receptor	DPM Annual Concentration μg/m³	Cancer Risk
Maximally Exposed Individual – Residential	0.0094	0.04 in 1 million

Source: SCREEN3 Model results. See Appendix 2.2-2 for complete results.

Table 2.2-19
Rugged - Summary of Maximum Chronic Hazard Index

Receptor	DPM Concentration μg/m³	Chronic Hazard Index
Maximally Exposed Individual – Residential	0.0094	0.0019

Source: SCREEN3 Model results. See Appendix 2.2-2 for complete results.

Table 2.2-20
Summary of Average DPM Concentrations Concrete Batch Plant Generators

Receptor	Modeled 1-hour Concentration μg/m³	Modeled Annual Concentration μg/m³
Maximally Exposed Individual – Residential	0.4147	0.0415

Source: SCREEN3 Model results. See Appendix 2.2-2 for complete results.

Table 2.2-21
Summary of Maximum Modeled Cancer Risks Concrete Batch Plant Generators

Receptor	DPM Annual Concentration μg/m³	Cancer Risk
Maximally Exposed Individual – Residential	0.0415	0.23 in 1 million

Source: SCREEN3 Model results. See Appendix 2.2-2 for complete results.

Table 2.2-22
Summary of Maximum Chronic Hazard Index Concrete Batch Plant Generators

Receptor	DPM Concentration μg/m³	Chronic Hazard Index
Maximally Exposed Individual – Residential	0.0415	0.008

Source: SCREEN3 Model results. See Appendix 2.2-2 for complete results.