APPENDIX A

Air Quality and GHG Assessment

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CHESTNUT SOLAR PROJECT AIR QUALITY ASSESSMENT

Kings County, California

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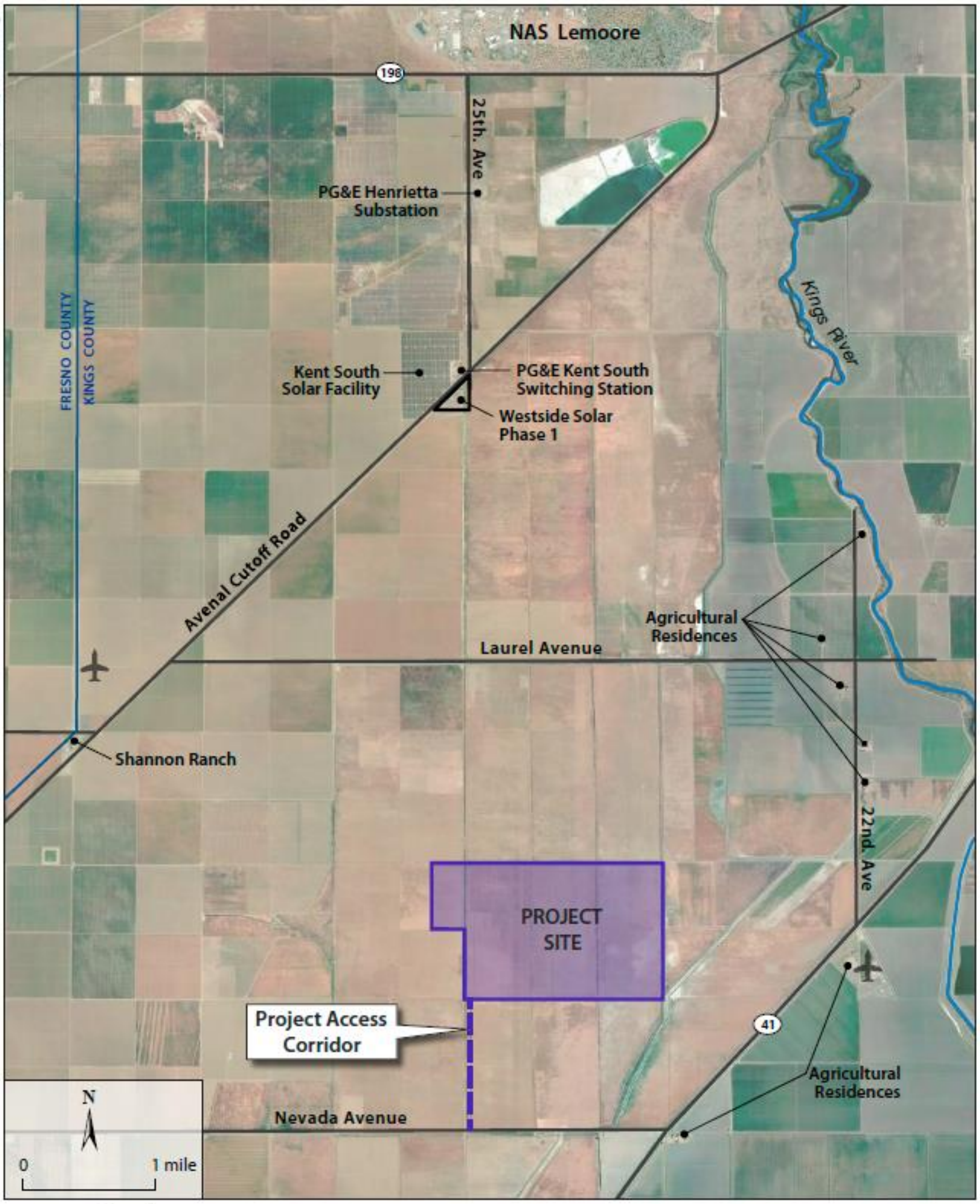
INTRODUCTION

This report assesses the air quality impacts associated with the Chestnut Project proposed in Kings County, California. The Project will occupy an approximately 1,040-acre site generally located to the northwest of State Route 41, south of Laurel Avenue, and west of 22nd Avenue in central Kings County (see Figure 1).



Source: Google Earth, 2018

Figure 1. Chestnut Solar Project Location

The Chestnut Solar Project is planned to generate a total of 150 megawatts (MW) of electrical output from solar photovoltaic (PV) modules. The project is planned to be constructed over an approximate 12-month period from mid-2020 through mid-2021. The solar modules will be mounted on a series of horizontal single-axis trackers which will be oriented north-south and rotate the solar arrays in an east-west direction. The solar modules output direct current (DC) power and the electricity travels to an inverter via underground cables to be converted to alternating current (AC) power.

The project's potential impacts on the local and regional air quality during construction and operation are assessed in this report. Development projects of this type in the San Joaquin Valley are most likely to cause air quality impacts from emissions generated during construction and indirect emissions from vehicles used to transport site employees and for vehicles dedicated for onsite maintenance uses. The San Joaquin Valley Air Pollution Control District (SJVAPCD) has published the Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI) that was used to conduct this air quality analysis.[1] This report describes existing air quality conditions, construction period air quality impacts, operational air quality impacts (at both a local and regional scale), and identifies mitigation measures necessary to reduce or eliminate air quality impacts identified as significant.

SETTING

TOPOGRAPHIC CONSIDERATIONS

The project site is located in Kings and Fresno Counties in the south-western portion of the San Joaquin Valley Air Basin. The California Air Resources Board (CARB) defines the boundaries of the basin by the San Joaquin Valley within the Sierra Nevada Mountains to the east, the Coast Ranges in the west, and the Tehachapi mountains in the south. The valley is basically flat with a slight downward gradient to the northwest. The valley opens to the ocean at the Carquinez Strait where the San Joaquin-Sacramento Delta empties into San Francisco Bay. The San Joaquin Valley, thus, could be considered a "bowl" with the primary opening to the north. The surrounding topographic features restrict air movement through and out of the basin and, as a result, impede the dispersion of air pollutants from the basin. Wind flow is usually down the valley from the north, but the Tehachapi Mountains block or restrict the southward progression of airflow. The Sierra Nevada is a substantial barrier from the usual winds that have a general westerly flow. The topographical features result in weak airflow. The flow is further restricted vertically by inversion layers that are common in the San Joaquin Valley air basin throughout the year. An inversion layer is created when a mass of warm dry air sits over cooler air near the ground, preventing vertical dispersion of pollutants from the air mass below. During the summer, the San Joaquin Valley experiences daytime temperature inversions at elevations from 1,500 to 3,000 feet above the valley floor. Airflow is considerably restricted since mountain ranges surrounding the valley are generally above the inversion. These inversions lead to a buildup of ozone and ozone precursor pollutants. During the fall and winter months, strong surface-based inversions occur from 500 to 1,000 feet above the valley floor (SJVAPCD 1998). Wintertime inversions trap very stable air near the surface and lead primarily to a buildup of particulate

[1] SJVAPCD. 2015. Guide for Assessing and Mitigating Air Quality Impacts. March.

matter air pollutants. Very light winds are also characteristic with these wintertime surface-based inversions.

AIR BASIN CHARACTERISTICS

The climate of the project area is characterized by hot dry summers and cool, mild winters. Clear days are common from spring through fall. Daytime temperatures in the summer often approach or exceed 100 degrees, with lows in the 60s. In the winter, daytime temperatures are usually in the 50s, with lows around 35 degrees. Radiation fog is common in the winter and may persist for days. Partly to mostly cloudy days are common in winter, as most precipitation received in the Valley falls from November through April.

Winds are predominantly up-valley (flowing from the north) in all seasons, but more so in the summer and spring months (CARB 1984). In this flow, winds are usually from the north end of the Valley and flow in a south-southeasterly direction, through Tehachapi Pass, into the Southeast Desert Air Basin. Annually, up-valley wind flow (i.e., northwest flow with marine air) is most common, occurring about 40% of the time. This type of flow is usually trapped below marine and subsidence inversions, restricting outflow through the Sierra Nevada and Tehachapi Mountains. The occurrence of this wind flow is almost 70% of the time in summer, but less than 20% of the time in winter. Winter and fall are characterized by mostly light and variable wind flow. Pacific storm systems do bring southerly flows to the valley during late fall and winter. Light and variable winds, less than 10 miles per hour (mph), are common in the colder months.

Superimposed on this seasonal regime is the diurnal wind cycle. In the Valley, this cycle takes the form of a combination of a modified sea breeze-land breeze and mountain-valley regimes. The sea breeze-land breeze regime typically has a modified sea breeze flowing into the Valley from the north during the late day and evening and then a land breeze flowing out of the Valley late at night and early in the morning. The mountain-valley regime has an upslope (mountain) flow during the day and a down slope (valley) flow at night. These effects create a complexity of regional wind flow and pollutant transport within the Valley.

The pollution potential of the San Joaquin Valley is very high. The San Joaquin Valley has one of the most severe air pollution problems in the State and the Country. Surrounding elevated terrain in conjunction with temperature inversions frequently restrict lateral and vertical dilution of pollutants. Abundant sunshine and warm temperatures in late spring, summer, and early fall are ideal conditions for the formation of ozone, where the Valley frequently experiences unhealthy air pollution days. Low wind speeds, combined with low inversion layers in the winter, create a climate conducive to high respirable particulate matter (PM_{10}) concentrations and elevated carbon monoxide (CO) levels.

REGULATORY SETTING

The Federal and California Clean Air Acts have established ambient air quality standards for different pollutants. National ambient air quality standards (NAAQS) were established by the Federal Clean Air Act of 1970 (amended in 1977 and 1990) for six "criteria" pollutants. These criteria pollutants now include carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), respirable particulate matter with a diameter less than 10 microns (PM_{10}), sulfur dioxide ($S0_2$), and lead (Pb). In 1997, The Environmental Protection Agency (EPA) added fine particulate matter ($PM_{2.5}$) as a criteria pollutant. The air pollutants for which standards have been established are considered the most prevalent air pollutants that are known to be hazardous to human health. California ambient air quality standards (CAAQS) include the NAAQS pollutants and also hydrogen sulfide, sulfates, vinyl chloride, and visibility reducing particles. These additional CAAQS pollutants tend to have unique sources and are not typically examined in environmental air quality assessments. In addition, lead concentrations have decreased dramatically since it was removed from motor vehicle fuels.

Federal Regulations

At the federal level, the United States Environmental Protection Agency (US EPA) administers and enforces air quality regulations. Federal air quality regulations were developed primarily from implementation of the Federal Clean Air Act. If an area does not meet NAAQS over a set period (three years), EPA designates it as a "nonattainment" area for that particular pollutant. EPA requires states that have areas that do not comply with the national standards to prepare and submit air quality plans showing how the standards would be met. If the states cannot show how the standards would be met, then they must show progress toward meeting the standards. These plans are referred to as the State Implementation Plan (SIP). Under severe cases, EPA may impose a federal plan to make progress in meeting the federal standards.

EPA also has programs for identifying and regulating hazardous air pollutants. The Clean Air Act requires EPA to set standards for these pollutants and sharply reduce emissions of controlled chemicals. Industries were classified as major sources if they emitted certain amounts of hazardous air pollutants. The US EPA also sets standards to control emissions of hazardous air pollutants through mobile source control programs. These include programs that reformulated gasoline, national low emissions vehicle standards, Tier 2 motor vehicle emission standards, gasoline sulfur control requirements, and heavy-duty engine standards.

The San Joaquin Valley Air Basin is subject to major air quality planning programs required by the federal Clean Air Act (CAA) (1977, last amended in 1990, 42 United States Code [USC] 7401 *et seq.*) to address ozone, particulate matter air pollution, and carbon monoxide. The CAA requires that regional planning and air pollution control agencies prepare a regional Air Quality Plan to outline the measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve all standards within the deadlines specified in the Clean Air Act. These plans are submitted to the State, which after approval, submits them to US EPA as the SIP.

State Regulations

The California Clean Air Act of 1988, amended in 1992, outlines a program for areas in the State to attain the CAAQS by the earliest practical date. CARB is the state air pollution control agency and is a part of the California EPA. The California Clean Air Act sets more stringent air quality standards for all of the pollutants covered under national standards, and additionally regulates levels of vinyl chloride, hydrogen sulfide, sulfates, and visibility-reducing particulates. If an area does not meet CAAQS, CARB designates the area as a nonattainment area. The San Joaquin Valley Air Basin does not meet the CAAQS for ozone, PM_{10}, and $PM_{2.5}$. CARB requires regions that do not meet CAAQS for ozone to submit clean air plans that describe plans to attain the standard or show progress toward attainment.

In addition to the US EPA, CARB further regulates the amount of air pollutants that can be emitted by new motor vehicles sold in California. Motor vehicle emissions standards have always been more stringent than federal standards since they were first imposed in 1961. CARB has also developed Inspection and Maintenance (I/M) and "Smog Check" programs with the California Bureau of Automotive Repair. Inspection programs for trucks and buses have also been implemented. CARB also sets standards for motor vehicle fuels sold in California.

San Joaquin Valley

The San Joaquin Valley Air Pollution Control District (SJVAPCD) is made up of eight counties in California's Central Valley: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings Tulare and the San Joaquin Valley portion of Kern. The primary role of the SJVAPCD is to develop plans and implement control measures in the San Joaquin Valley to control air pollution. These controls primarily affect stationary sources such as industry and power plants. Rules and regulations have been developed by SJVAPCD to control air pollution from a wide range of air pollution sources. In March 2007, an Indirect Source Review (ISR) rule was adopted that controls air pollution from new land developments. SJVAPCD also conducts public education and outreach efforts such as the Spare the Air, Wood Burning, and Smoking Vehicle voluntary programs.

Kings County 2035 General Plan. The Air Quality Element establishes goals, objectives, and policies to guide planning decisions and provides the platform for local action in addressing air quality and climate change issues.

Applicable goals, objectives, and policies presented in the General Plan are as follows:

C. Air Quality Management

AQ GOAL C1 Use Air Quality Assessment and Mitigation programs and resources of the SJVAPCD and other agencies to minimize air pollution, related public health effects, and potential climate change impacts within the County.

AQ OBJECTIVE C1.1 Accurately assess and mitigate potentially significant local and regional air quality and climate change impacts from proposed projects within the County.

The environmental assessment process required under the California Environmental Quality Act (CEQA) is by far the most important tool for local government to communicate with other agencies and the public on the air quality impacts of new development within a community. Strong and consistent application of CEQA requirements can make a significant difference in preventing or minimizing project level air quality impacts. In addition, the County can also offer its assistance to existing land uses to reduce their air pollution and greenhouse gas emissions.

AQ Policy C1.1.1: Assess and mitigate project air quality impacts using analysis methods and significance thresholds recommended by the SJVAPCD.

AQ Policy C1.1.2: Assess and mitigate project greenhouse gas/climate change impacts using analysis methods and significance thresholds as defined or recommended by the SJVAPCD, KCAG or California Air Resources Board (ARB) depending on the type of project involved.

AQ Policy C1.1.3: Ensure that air quality and climate change impacts identified during CEQA review are minimized and consistently and fairly mitigated at a minimum, to levels as required by CEQA.

AQ Policy C1.1.4 Identify and maintain an on-going inventory of the cumulative transportation, air quality, and climate change impacts of all general plan amendments approved during each year.

AQ Policy C1.1.5 Assess and reduce the air quality and potential climate change impacts of new development projects that may be insignificant by themselves but, taken together, may be cumulatively significant for the County as a whole.

AQ Policy C1.1.6 Encourage and support the development of innovative and effective mitigation measures and programs to reduce air quality and climate change impacts through proactive coordination with the SJVAPCD, project applicants, and other knowledgeable and interested parties.

AQ Policy C1.1.7 Initiate through the Community Development Agency discussions with the SJVAPCD to develop a program and identify mitigation projects that would permit the expenditure of SJVAPCD Rule 9510 – Indirect Source Review air quality mitigation fees generated in Kings County on air quality projects in Kings County to maximize local benefits to air quality and the economy.

AQ Policy C1.1.8 Actively work with project sponsors to maximize their participation in Voluntary Emission Reduction Agreements (VERA) with the SJVAPCD that fulfill the requirements of CEQA and Rule 9510 and provide emission reductions at least as large as those required by Rule 9510. The VERA process provides an opportunity for the County to identify local air emission reduction projects and expand the County's active participation in the project selection process.

E. Energy Efficiency and Conservation

AQ GOAL E1 Minimize air emissions and potential climate change impacts related to energy consumption in the County.

AQ OBJECTIVE E1.1 Increase the use of energy conservation features, renewable sources of energy and low-emission equipment in new and existing development projects within the County.

Natural gas burning appliances used for space heating, water heating, and cooking are a sizable source of NO_x and CO_2 emissions. Consumption of electricity also causes pollutant emissions from the operation of power plants fueled by fossil fuels. Reduction in local energy demand will also reduce overall energy demand, which decreases the expediency for new energy production plant construction. Local efforts to reduce energy consumption can save consumers money and improve air quality. Simple and cost-effective designs, technologies, and methods are available to achieve energy savings and reduce air pollutant emissions.

AQ Policy E1.1.1 Initiate and sustain ongoing efforts with local water and energy utilities and developers to establish and implement voluntary incentive based programs to encourage the use of energy efficient designs and equipment in new and existing development projects within the County.

AQ Policy E1.1.2 Initiate and sustain ongoing efforts with agriculture, the building industry, water and energy utilities and the SJVAPCD to promote enhanced energy conservation and sustainable building standards for new construction.

AQ Policy E1.1.3 Work with local water and energy utilities and the building industry to develop or revise County design standards relating to solar orientation of building occupancies, water use, landscaping, reduction in impervious surfaces, parking lot shading and such other measures oriented towards reducing energy demand.

AQ Policy E1.1.4 Actively promote the more efficient location of industries within the County which are labor intensive, utilize cogeneration or renewable sources of energy, support and enhance agricultural activities, and are consistent with other policies of the General Plan.

AQ Policy E1.1.5 County staff will proactively work with the Cooperative Agricultural Extension office, California Energy Commission, local water and energy utilities, the agricultural industry, and other potential partners to seek funding sources and implement programs which reduce water and energy use, reduce air emissions and reduce the creation of greenhouse gases.

F. Hazardous Emissions and Public Health

AQ GOAL F1 Minimize exposure of the public to hazardous air pollutant emissions, particulates and noxious odors from freeways, major arterial roadways, industrial, manufacturing, and processing facilities.

AQ OBJECTIVE F1.1 Locate adequate sites for industrial development and roadway projects away from existing and planned sensitive land uses which minimize or avoid potential health risks to people that might result from hazardous air pollutant emissions.

Decisions for locating industrial and residential development has the potential to create land use conflicts due to exposure to hazardous emissions. In addition, planning sensitive land uses in proximity to major transportation routes and facilities can also result in public health concerns. Providing appropriate locations and separation for incompatible land uses for all types of development can minimize conflicts and promote economic growth.

AQ Policy F1.1.1 Locate residential development projects and projects categorized as sensitive receptors an adequate distance from existing and potential sources of hazardous emissions such as major transportation corridors, industrial sites, and hazardous material locations in accordance with the provisions of ARB's Air Quality and Land Use Handbook.

AQ Policy F1.1.2 Locate new air pollution point sources such as, but not limited to industrial, manufacturing, and processing facilities an adequate distance from residential areas and other sensitive receptors in accordance with the provisions of ARB's Air Quality Land Use Handbook.

AQ OBJECTIVE F2.1 Reduce emissions of PM_{10}, $PM_{2.5}$ and other particulates from sources with local control potential or under the jurisdiction of the County.

Levels of PM_{10} (particulate matter less than 10 microns in diameter) no longer exceed federal health based standards. However, maintenance of the federal standard and achieving the state standard while accommodating growth will require continued effort. The San Joaquin Valley was recently reclassified as a maintenance area for PM_{10} under the federal criteria. Because of this classification, the SJVAPCD is required to take actions to ensure continued maintenance of the standard in the future. This is accomplished by the continued implementation of Best Available Control Measures (BACM) on all significant sources of emissions. Control efforts for sources under the jurisdiction of the County can significantly reduce these emissions. The SJVAB also exceeds the annual $PM_{2.5}$ (particulate matter less than 2.5 microns in diameter) standards. Some actions to reduce PM_{10} and ozone precursors will also reduce $PM_{2.5}$.

AQ Policy F2.1.1 Coordinate with the SJVAPCD to ensure that construction, grading, excavation and demolition activities within County's jurisdiction are regulated and controlled to reduce particulate emissions to the maximum extent feasible.

AQ Policy F2.1.2 Require all access roads, driveways, and parking areas serving new commercial and industrial development are constructed with materials that minimize particulate emissions and are appropriate to the scale and intensity of use.

AQ Policy F2.1.3 Develop a program to reduce PM_{10} emissions from County maintained roads to the maximum extent feasible.

G. Climate Change

AQ GOAL G1 Reduce Kings County's proportionate contribution of greenhouse gas emissions and the potential impact that may result on climate change from internal governmental operations and land use activities within its authority.

AQ OBJECTIVE G1.1 Identify and achieve greenhouse gas emission reduction targets consistent with the County's proportionate fair share as may be allocated by ARB and KCAG.

Global climate change is an emerging issue that requires all levels of government to take action to reduce emissions under their jurisdiction and influence.

AQ Policy G1.1.1 As recommended in ARB's Climate Change Adopted Scoping Plan (December 2008), the County establishes an initial goal of reducing greenhouse gas emissions from its internal governmental operations and land use activities within its authority to be consistent with ARB's adopted reduction targets for the year 2020. The County will also work with KCAG to ensure that it achieves its proportionate fair share reduction in greenhouse gas emissions as may be identified under the provisions of SB 375 (2008 Chapter 728) for any projects or activities requiring approval from KCAG.

AQ Policy G1.1.2 Progress in meeting the goals specified in AQ Policy G1.1.1 will be monitored and reported to the Board of Supervisors in the Annual Progress Report required by Government Code Section 65400(a)(2). Should the Board determine that sufficient progress is not being made to achieve the identified goals, or that proposed measures are ineffective or insufficient in meeting the goals, additional measures will be adopted as necessary.

AQ Policy G1.1.3 County staff should explore opportunities to utilize the net emission reductions identified through the confined animal feeding operation approval process to offset greenhouse gas emissions on a regional basis.

NATIONAL AND STATE AMBIENT AIR QUALITY STANDARDS

The CAA and CCAA promulgate, respectively, national and State ambient air quality standards. Air quality standards have been established by US EPA (i.e., NAAQS) and California (i.e., CAAQS) for specific air pollutants most pervasive in urban environments. The NAAQS and CAAQS are shown in Table 1. Ambient standards specify the concentration of pollutants to which the public may be exposed without adverse health effects. Individuals vary in their sensitivity to air pollutants, and standards are set to protect more pollution-sensitive populations (e.g., children and the elderly). National and State standards are reviewed and updated periodically based on new health studies. California ambient standards tend to be at least as protective as national ambient standards and are often more stringent. For planning purposes, regions like the San Joaquin Valley Air Basin are given an air quality status designation by the federal and State regulatory agencies. Areas with monitored pollutant concentrations that are lower than ambient air quality standards are designated "attainment" on a pollutant-by-pollutant basis. When monitored concentrations exceed ambient standards within an air basin, it is designated "nonattainment" for that pollutant. US EPA designates areas as "unclassified" when insufficient data are available to determine the attainment status. These areas are typically considered to be in attainment of the standard.

CRITERIA AIR POLLUTANTS AND THEIR HEALTH EFFECTS

The primary criteria air pollutants that would be emitted by the project include ozone (O_3) precursors (NO_x and ROG), carbon monoxide (CO), and suspended particulate matter (PM_{10} and $PM_{2.5}$). Other criteria pollutants, such as lead (Pb) and sulfur dioxide (SO_2), would not be substantially emitted by the Chestnut Solar project or traffic, and air quality standards for them are being met throughout the San Joaquin Valley Air Basin. A description of each pollutant is provided below, as described by SJVAPCD (2015) and the Bay Area Air Quality Management District.[2]

Ozone (O_3)

CARB describes the ozone and health impacts (CARB 2016a). While O_3 serves a beneficial purpose in the upper atmosphere (stratosphere) by reducing ultraviolet radiation potentially harmful to humans, when it reaches elevated concentrations in the lower atmosphere (troposphere) it can be harmful to the human respiratory system and to sensitive species of plants. Ozone concentrations build to peak levels during periods of light winds, bright sunshine, and high temperatures. Short-term O_3 exposure can reduce lung function in children, make persons susceptible to respiratory infection, and produce symptoms that cause people to seek medical treatment for respiratory distress. Long-term exposure can impair lung defense mechanisms and lead to emphysema and chronic bronchitis. A healthy person exposed to high concentrations may become nauseated or dizzy, may develop headache or cough, or may experience a burning sensation in the chest.

Ozone is formed in the atmosphere by a complex series of photochemical reactions that involve "ozone precursors" that consist of two families of pollutants: oxides of nitrogen (NO_x) and reactive organic gases (ROG). NO_x and ROG are emitted from a variety of stationary and mobile sources. While NO_2, an oxide of nitrogen, is another criteria pollutant itself, ROGs are not in that category, but are included in this discussion as O_3 precursors. In 2007, CARB adopted an 8-hour

[2] Bay Area Air Quality Management District (BAAQMD). 2011. *BAAQMD CEQA Air Quality Guidelines*. May (updated May 2017). http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

health-based standard for O_3 of 0.070 ppm. The U.S. EPA revised the 8-hour NAAQS for O_3 from 0.080 ppm in 2008 and reduced it again in 2015 to 0.070 ppm[3] (CARB 2005, 2012, US EPA 2018).

TABLE 1 Ambient Air Quality Standards[4]

Pollutant	Averaging Time	California Standards Concentration	National Standards Concentration
Ozone	1-hour	0.09 ppm (180 µg/m^3)	—
	8-hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3) (3-year average of annual 4th highest daily maxima)
Carbon Monoxide	8-hour	9.0 ppm (10,000 µg/m^3)	9 ppm (10,000 µg/m^3)
	1-hour	20 ppm (23,000 µg/m^3)	35 ppm (40,000 µg/m^3)
Nitrogen dioxide	Annual Average	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
	1-hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3) (3-year average of annual 98th percentile daily maxima)
Sulfur dioxide			
	24-hour	0.04 ppm (105 µg/m^3)	—
	3-hour	—	0.5 ppm (1,300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3) (3-year average of annual 99th percentile daily maxima)
Respirable particulate matter (10 micron)	24-hour	50 µg/m^3	150 µg/m^3
	Annual Arithmetic Mean	20 µg/m^3	—
Fine particulate matter (2.5 micron)	Annual Arithmetic Mean	12 µg/m^3	12.0 µg/m^3 (3-year average)
	24-hour	—	35 µg/m^3 (3-year average of annual 98th percentile daily concentrations)
Sulfates	24-hour	25 µg/m^3	—
Lead	30-day	1.5 µg/m^3	—
	3 Month Rolling Average	—	0.15 µg/m^3

Source: CARB website, 12/1/16.
SO_2 Federal 24 hour and annual standards are not applicable in the SJVAPCD.
µg/m^3 = micrograms per cubic meter
ppm = parts per million

Carbon Monoxide (CO)

[3] U.S. EPA. 2017. *2008 National Ambient Air Quality Standards (NAAQS) for Ozone*. See https://www.epa.gov/ozone-pollution/2008-national-ambient-air-quality-standards-naaqs-ozone. Accessed 06/19/18.

[4] Source: California Air Resources Board (http://www.arb.ca.gov)

CARB describes carbon monoxide and the health effects (CARB 2016b). Carbon monoxide or CO is a colorless, odorless, poisonous gas. Carbon monoxide's health effects are related to its affinity for hemoglobin in the blood. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause dizziness and fatigue, and causes reduced lung capacity, impaired mental abilities and central nervous system function, and induces angina in persons with serious heart disease. Primary sources of CO in ambient air are exhaust emissions from on-road vehicles, such as passenger cars and light-duty trucks, and residential wood burning. The monitored CO levels in the Valley during the last 10 years have been well below ambient air quality standards.

Nitrogen Dioxide (NO_2)

As described by CARB (2016c), the major health effect from exposure to high levels of NO_2 is the risk of acute and chronic respiratory disease. Nitrogen dioxide is a combustion by-product, but it can also form in the atmosphere by chemical reaction. Nitrogen dioxide is a reddish-brown colored gas often observed during the same conditions that produce high levels of O_3 and can affect regional visibility. Nitrogen dioxide is one compound in a group of compounds consisting of oxides of nitrogen (NO_x). As described above, NO_x is an O_3 precursor compound. Monitored levels of NO_2 in the Valley are below ambient air quality standards.

Particulate Matter (PM)

CARB describes unhealthy particulate matter and the health effects (CARB 2016d). Respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$) consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. PM_{10} and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled and cause adverse health effects. PM_{10} and $PM_{2.5}$ are a health concern, particularly at levels above the Federal and State ambient air quality standards. $PM_{2.5}$ (including diesel exhaust particles) is thought to have greater effects on health because minute particles are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Children are more susceptible to the health risks of $PM_{2.5}$ because their immune and respiratory systems are still developing. These fine particulates have been demonstrated to decrease lung function in children. Certain components of PM are linked to higher rates of lung cancer. Very small particles of certain substances (e.g., sulfates and nitrates) can also directly cause lung damage or can contain absorbed gases (e.g., chlorides or ammonium) that may be injurious to health.

Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as mining and demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. In addition to health effects, particulates also can damage materials and reduce visibility. Dust comprised of large particles (diameter greater than 10 microns) settles out rapidly and is more easily filtered by human breathing passages. This type of dust is considered more of a soiling nuisance rather than a health hazard.

The current State PM_{10} standard, approved in 2002, is 20 micrograms per cubic meter ($\mu g/m^3$) for an annual average. The 24-hour average standard is 50 $\mu g/m^3$. $PM_{2.5}$ standards were first promulgated by the U.S. EPA in 1997 and were revised in 2006 to lower the 24-hour $PM_{2.5}$ standard to 35 $\mu g/m^3$ for 24-hour exposures (Federal Register, Vol. 71, No. 10, January 17, 2006). That same action by U.S. EPA also revoked the annual PM_{10} standard due to lack of scientific evidence correlating long-term exposures of ambient PM_{10} with health effects. CARB has only adopted an annual average $PM_{2.5}$ standard, which is set at 12 $\mu g/m^3$. This is equal to the NAAQS of 12 $\mu g/m^3$ (CARB 2016f).

TOXIC AIR CONTAMINANTS

Besides the "criteria" air pollutants, there is another group of substances found in ambient air referred to as Hazardous Air Pollutants (HAPs) under the CAA and Toxic Air Contaminants (TACs) under the CCAA. These contaminants tend to be localized and are found in relatively low concentrations in ambient air. However, they can result in adverse chronic health effects if exposure to low concentrations occurs for long periods. They are regulated at the local, state, and federal level.

HAPs are the air contaminants identified by U.S. EPA as known or suspected to cause cancer, serious illness, birth defects, or death. Many of these contaminants originate from human activities, such as fuel combustion and solvent use. Mobile source air toxics (MSATs) are a subset of the 188 HAPS. Of the 21 HAPs identified by U.S. EPA as MSATs, a priority list of six priority HAPs were identified that include: diesel exhaust, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. The Federal Highway Administration (FHWA 2012) reports that while vehicle miles traveled (VMT) in the United States is expected to increase by 64 percent over the period 2000 to 2020, emissions of MSATs are anticipated to decrease substantially as a result of efforts to control mobile source emissions (by 57% to 67% depending on the contaminant).

California developed a program under the Toxic Air Contaminant Identification and Control Act (Assembly Bill [AB] 1807, Tanner 1983), also known as the Tanner Toxics Act, to identify, characterize and control TACs. Subsequently, AB 2728 (Tanner, 1992) incorporated all 188 HAPs into the AB 1807 process. TACs include all HAPs plus other containments identified by CARB. These are a broad class of compounds known to cause morbidity or mortality (cancer risk). TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, 1987, Connelly), described by CARB (2016e), was enacted in 1987, and requires stationary sources to report the types and quantities of certain substances routinely released into the air. The goals of the Air Toxics "Hot Spots" Act are to collect emission data, to identify facilities having localized impacts, to ascertain health risks, to notify nearby residents of significant risks, and to reduce those significant risks to acceptable levels.

Particulate matter from diesel exhaust is the predominant TAC in urban air and is estimated to represent about 70 percent of the cancer risk from TACs, based on the statewide average reported by CARB (2012). According to CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by CARB, and are listed as carcinogens either under State Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB (2012) reports that recent air pollution studies have shown an association that diesel exhaust and other cancer-causing toxic air contaminants emitted from vehicles are responsible for much of the overall cancer risk from TACs in California. Particulate matter emitted from diesel-fueled engines (diesel particulate matter [DPM]) was found to comprise much of that risk. In 1998, CARB formally identified DPM as a TAC (CARB 2012). Diesel particulate matter is of particular concern since it can be distributed over large regions, thus leading to widespread public exposure. The particles emitted by diesel engines are coated with chemicals, many of which have been identified by U.S. EPA as HAPs, and by CARB as TACs. The vast majority of diesel exhaust particles (over 90 percent) consist of $PM_{2.5}$, which are the particles that can be inhaled deep into the lung (CARB 2012). Like other particles of this size, a portion will eventually become trapped within the lung possibly leading to adverse health effects. While the gaseous portion of diesel exhaust also contains TACs, CARB's 1998 action was specific to DPM, which accounts for much of the cancer-causing potential from diesel exhaust. California has adopted a comprehensive diesel risk reduction program to reduce DPM emissions 85 percent by 2020 (CARB 2000). The EPA and CARB adopted low sulfur diesel fuel standards in 2006 that reduce diesel particulate matter substantially.

Smoke from residential wood combustion can be a source of TACs. Wood smoke is typically emitted during winter when dispersion conditions are poor. Localized high TAC concentrations can result when cold stagnant air traps smoke near the ground and, with no wind the pollution can persist for many hours, especially in sheltered valleys during winter. Wood smoke also contains a significant amount of PM_{10} and $PM_{2.5}$. Wood smoke is an irritant and is implicated in worsening asthma and other chronic lung problems.

EXISTING AIR QUALITY

As previously discussed, the San Joaquin Valley experiences poor air quality conditions, due primarily to elevated levels of ozone and particulate matter (SJVAPCD 2015a). CARB, in cooperation with SJVAPCD, monitors air quality throughout the San Joaquin Valley Air Basin. Monitoring data presented in Table 2 was derived for each pollutant based upon the closest monitoring station to the project site.

Ozone

In California, ozone concentrations are generally lower near the coast regions than inland regions. The inland regions, such as the San Joaquin Valley, typically experience some of the higher ozone concentrations. This is because of the greater frequency of hot days (that is, higher temperatures) and stagnant air conditions (that is, very calm atmospheric conditions with very gentle winds) that are conducive to ozone formation. Many areas of the Valley lie downwind of urban areas that are sources of ozone precursor pollutants. While Kings County is fairly rural, exceedances of the ozone standard occurred on up to 49 days per year, based on the last 3 years of monitoring data.

Carbon Monoxide

State and federal standards for carbon monoxide are met throughout California as a result of cleaner vehicles and fuels that were reformulated in the 1990s. For CO, the 2012 monitored value of 2.2 ppm for an 8-hour average was used as the air basin maximum level (CARB 2016f). Because CO levels are so low in the air basin, monitoring was discontinued after 2012.

TABLE 2 Summary of Criteria Air Pollution Monitoring Data for Kings County

Pollutant	Standard	Monitored Values[1] and Exceedance Days		
		2015	2016	2017
Ozone (ppm)	State 1-Hour	.119 / 4	.097 / 2	.106 / 7
Ozone (ppm)	State 8-Hour	.094 / 42	.088 / 49	.094 / 38
Ozone (ppm)	Federal 8-Hour	0.094 / 42	0.088 / 49	0.094 / 38
PM_{10} (ug/m^3)	State 24-Hour	109/ 17	111/ 20	149/ 20
PM_{10} (ug/m^3)	Federal 24-Hour	137/ 0	152/ 0	298/ 1[2]
$PM_{2.5}$ (ug/m^3)	Federal 24-Hour	99.2 / 28	59.7/ 25	112.3 / 17
$PM_{2.5}$ (ug/m^3)	State Annual	18	16	17
$PM_{2.5}$ (ug/m^3)	Federal Annual	16.5	15.5	15.0
Carbon Monoxide (ppm)	State/Fed.8-Hour	NA / --[3]	NA / --[3]	NA / --[3]
Nitrogen Dioxide (ppm)	State 1-Hour	0.051 / 0	0.052 / 0	0.057 / 0
Nitrogen Dioxide (ppm)	Federal 1-Hour	0.051 / 0	0.052 / 0	0.057 / 0
Nitrogen Dioxide (ppm)	Federal Annual	9	9	8

Note: (1) Monitored values are the high values considering the form of the applicable standard,
(2) affected by October 2017 firestorms, and
(3) NA = not available in summaries, but last measured levels in 2012 were 2 ppm.
Source: CARB ADAM Data at http://www.arb.ca.gov/adam/index.html, Accessed 10/20/18

Particulate Matter ($PM_{2.5}$ and PM_{10})

Most areas of California have either 24-hour or annual PM_{10} concentrations that exceed the State standards. Most urban areas exceed the State annual standard and the 2006 24-hour federal standard. In the San Joaquin Valley (S.J. Valley or Valley), there is a strong seasonal variation in PM, with higher PM_{10} and $PM_{2.5}$ concentrations occurring in the fall and winter months. These higher concentrations are caused by increased activity for some emission sources and meteorological conditions that are conducive to the build-up of particulate matter. Industry and motor vehicles consistently emit particulate matter. Seasonal sources of particulate matter in San Joaquin Valley include wildfires, agricultural activities, windblown dust, and residential wood burning. In California, area sources, which primarily consist of fugitive dust, account for the majority of directly emitted particulate matter. This includes dust from paved and unpaved roads. The ARB estimates that 85 percent of directly emitted PM_{10} (and 66 percent of directly emitted $PM_{2.5}$) is from area sources (SJVAPCD 2016). During the winter, the $PM_{2.5}$ size fraction makes up much of the total particulate matter concentrations. The major contributor to high levels of ambient $PM_{2.5}$ is the secondary formation of particulate matter caused by the reaction of NO_x and ammonium to form ammonium nitrate. ARB estimates that the secondary portion of $PM_{2.5}$ makes up about 50 percent of the annual concentrations in the Valley (SJVAPCD 2016). The S.J. Valley also records high PM_{10} and $PM_{2.5}$ levels during the fall. During this season, both the coarse fraction (from dust) and the $PM_{2.5}$ fraction result in elevated $PM_{2.5}$ and PM_{10} concentrations. Monitored $PM_{2.5}$ levels exceeded federal standards on 17 to 28 days based on sampling every sixth day.

Other Pollutants

Current and past air monitoring data indicate that the San Joaquin Valley meets ambient air quality standards for NO_2, SO_2, and lead. Monitoring of lead, sulphates, hydrogen sulfide and vinyl chloride is not routinely conducted by CARB in the air basin (CARB 2018).

Air Quality Trends

Air quality in the Valley has improved significantly despite a natural low capacity for pollution, created by unique geography, topography, and meteorology. Emissions have been reduced at a rate similar or better than other areas in California. Since 1990, emissions of ozone precursors (i.e., NO_x and ROG) reduced by 80 percent (CARB 2016g), resulting in much fewer days where ozone standards have been exceeded. Direct emissions of PM_{10} and $PM_{2.5}$ have been reduced by 10 to 13 percent (CARB 2013). As a result, the San Joaquin Valley is the first air basin that was previously classified as "serious nonattainment" under the NAAQS to come into attainment of the PM_{10} standards.

ATTAINMENT STATUS

Areas that do not violate ambient air quality standards are considered to have attained the standard. Violations of ambient air quality standards are based on air pollutant monitoring data and are judged for each air pollutant. The San Joaquin Valley as a whole does not meet State or federal ambient air quality standards for ground level O_3 and State standards for PM_{10} and $PM_{2.5}$. The attainment status for the Valley with respect to various pollutants of concern is described in Table 3.

Under the CAA, the U.S. EPA has classified the Air Basin as *extreme nonattainment* for the 8-hour O_3 standard. As mentioned earlier, the Air Basin has attained the NAAQS for PM_{10}. The Air Basin is designated *nonattainment* for the older 1997 $PM_{2.5}$ NAAQS. U.S. EPA recently designated the Air Basin as nonattainment for the newer 2006 24-hour $PM_{2.5}$ standard. The U.S. EPA classifies the Air Basin as *attainment* or *unclassified* for all other air pollutants, which include CO and NO_2.

At the state level, the Air Basin is considered *severe nonattainment* for ground level O_3 and *nonattainment* for PM_{10} and $PM_{2.5}$. In general, California ambient air quality standards are more stringent than the national ambient air quality standards. The Air Basin is required to adopt plans on a triennial basis that show progress towards meeting the State O_3 standard. The Air Basin is considered *attainment* or *unclassified* for all other pollutants.

TABLE 3 Project Area Attainment Status

Pollutant	Federal Status	State Status
Ozone (O_3) – 1-Hour Standard	No Designation	Severe Nonattainment
Ozone (O_3) – 8-Hour Standard	Extreme Nonattainment	Nonattainment
Respirable Particulate Matter (PM_{10})	Attainment-Maintenance	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Attainment	Attainment
Nitrogen Dioxide (NO_2)	Attainment	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Sulfates and Lead	No Designation	Attainment
Hydrogen Sulfide	No Designation	Unclassified
Visibility Reducing Particles	No Designation	Unclassified

REGIONAL AIR QUALITY PLANS

In response to not meeting the NAAQS, the region is required to submit attainment plans to US EPA through the State, which are referred to as SIP.

CARB submitted the 2004 Extreme Ozone Attainment Demonstration Plan to EPA in 2004, which addressed the old 1-hour NAAQS. The region's 2007 Ozone Plan, addressing the 8-hour ozone NAAQS, was submitted to US EPA and approved in March 2012. That plan predicts attainment of the standard throughout 90 percent of the district by 2020 and the entire district by 2024. To accomplish these goals, the plan would reduce NO_x emissions further by 75 percent and ROG emissions by 25 percent. A wide variety of control measures are included in these plans, such as reducing or offsetting emissions from construction and traffic associated with land use developments. The air basin was recently designated as an extreme ozone nonattainment area for the more stringent 2008 8-hour ozone NAAQS. The plan to address this standard is expected to be due to EPA in 2016. Addressing the 2008 8-hour ozone standard will pose a tremendous challenge for the Valley, given the naturally high background ozone levels and ozone transport into the Valley.

On April 25, 2008, US EPA proposed to approve the 2007 PM_{10} Maintenance Plan and Request for Re-designation. The region now meets the NAAQS for PM_{10}. The SJVAPCD adopted the 2008 $PM_{2.5}$ Plan on April 30, 2008. US EPA has designated the basin as Attainment.

The SJVAPCD adopted the 2012 $PM_{2.5}$ Plan on December 20, 2012. This plan was approved by CARB on January 24, 2013. This plan will assure that the Valley will attain the 2006 $PM_{2.5}$ NAAQS by the 2019 deadline. The plan uses control measures to reduce NO_x, which also leads to fine particulate formation in the atmosphere. The plan incorporates measures to reduce direct emissions of $PM_{2.5}$, including a strengthening of regulations for various SJVAB industries and the general public through new rules and amendments. The plan estimates that the SJVAB will reach the $PM_{2.5}$ standard by 2014.

Both the ozone and $PM_{2.5}$ plans include all measures (i.e., federal, state and local) that would be implemented through rule making or program funding to reduce air pollutant emissions. Transportation Control Measures (TCMs) are part of these plans. The plans described above addressing ozone also meet the state planning requirements.

SJVAPCD RULES AND REGULATIONS

The SJVAPCD has adopted rules and regulations that apply to land use projects, such as the proposed project. These are described below.

SJVAPCD Indirect Source Review Rule

In 2005, the SJVAPCD adopted Rule 9510 Indirect Source Review (ISR or Rule 9510) to reduce NO_x and PM_{10} emissions from new land use development projects. The rule, which became effective March 1, 2006, is the result of state requirements outlined in the region's portion of the State Implementation Plan (SIP). Rule 9510 was amended in December 2017 (and became effective March 21, 2018) to ensure that all large development projects are subject to the rule (SJVAPCD 2017). The SJVAPCD's SIP commitments are contained in the 2004 Extreme Ozone Attainment Demonstration Plan and the 2003 PM_{10} Plan. These plans identified the need to reduce PM_{10} and NO_x substantially in order to attain and maintain the ambient air-pollution standards on schedule.

New projects that would generate substantial air pollutant emissions are subject to this rule. The rule requires projects to mitigate both construction and operational period emissions by applying the SJVAPCD-approved mitigation measures and paying fees to support programs that reduce emissions. The rule requires mitigated exhaust emissions during construction based on the following levels:

- 20% reduction from unmitigated baseline in total NO_x exhaust emissions
- 45% reduction from unmitigated baseline in total PM_{10} exhaust emissions

For operational emissions, Rule 9510 requires the following reductions:

- 33.3% of the total operational NO_x emissions from unmitigated baseline
- 50% of the total operational PM_{10} exhaust emissions from unmitigated baseline

Fees apply to the unmitigated portion of the emissions and are based on estimated costs to reduce the emissions from other sources plus estimated costs to cover administration of the program. In accordance with ISR, the project applicant will submit an application for approval of an Air Impact Assessment (AIA) to the SJVAPCD.

Regulation VIII – Fugitive PM_{10}

SJVAPCD controls fugitive PM_{10} through Regulation VIII (Fugitive PM_{10} Prohibitions). The purpose of this regulation is to reduce ambient concentrations of PM_{10} by requiring actions to prevent, reduce or mitigate anthropogenic (human caused) fugitive dust emissions. This applies to activities such as construction, bulk materials, open areas, paved and unpaved roads, material transport, and agricultural areas. Sources regulated are required to provide dust control plans that meet the regulation requirements. Fees are collected by SJVAPCD to cover costs for reviewing plans and conducting field inspections.

Other SJVAPCD Rules

Other SJVAPCD Rules and Regulations that may be applicable to the project include, but are not limited to:

- Rule 4101 (Visible Emissions): The purpose of this rule is to prohibit the emissions of visible air contaminants to the atmosphere. The provisions of this rule apply to any source operation which emits or may emit air contaminants.
- Rule 4102 (Nuisance): The purpose of this rule is to protect the health and safety of the public, and applies to any source operation that emits or may emit air contaminants or other materials.
- Rule 4601 (Architectural Coatings): The purpose of this rule is to limit Volatile Organic Compounds (VOC) emissions from architectural coatings. Emissions are reduced by limits on VOC content and providing requirements on coatings storage, cleanup, and labeling.
- Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations): The purpose of this rule is to limit VOC emissions from asphalt paving and maintenance operations. Paving operations will be subject to Rule 4641.

The Air District is anticipated to provide a determination of applicable rules/regulations to the project when specific building, grading, etc. plans are provided to the Air District prior to initiation of construction- and operation-related activities that fall within the purview of the Air District's regulatory authority.

SENSITIVE RECEPTORS

"Sensitive receptors" are defined as facilities where sensitive population groups, such as children, the elderly, the acutely ill, and the chronically ill, are likely to be located. Land uses that include sensitive receptors are residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and medical clinics.

The nearest residences consist of dispersed rural residences located along Highway 41, east and south of the project site. The closest receptor is 5,400 feet south, with other residences 1.5 miles or further away.

IMPACT ANALYSIS

STANDARDS OF SIGNIFICANCE

Appendix G, of the California Environmental Quality Act (CEQA) Guidelines (Environmental Checklist) contains a list of project effects that may be considered significant. The project would result in a significant impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant effect on the environment;
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The SJVAPCD has developed the Guide for Assessing and Mitigating Air Quality Impacts (SJVAPCD 2015), also known as the GAMAQI. The following thresholds of significance, obtained from the SJVAPCD's GAMAQI, are used to determine whether a proposed project would result in a significant air quality impact:

1) Construction Emissions of PM. Construction projects are required to comply with Regulation VIII as listed in the SJVAPCD; however, the size of the project and the proximity to sensitive receptors may warrant additional measures.

2) Criteria Air Pollutant Emissions. SJVAPCD current adopted thresholds of significance for criteria pollutant emissions and their application is presented in Table 4. These thresholds address both construction and operational emissions. Note that the District treats permitted equipment and activities separately. The project is not considered a source of SOx emissions and would have relatively low CO emissions.

3) Ambient Air Quality. Emissions that are predicted to cause or contribute to a violation of an ambient air quality would be considered a significant impact. SJVAPCD recommends that dispersion modeling be conducted for construction or operation when on-site emissions exceed 100 pounds per day after implementation of all mitigation measures.

4) Local CO Concentrations. Traffic emissions associated with the proposed project would be considered significant if the project contributes to CO concentrations at receptor locations in excess of the ambient air quality standards.

5) Toxic Air Contaminants or Hazardous Air Pollutants. Exposure to HAPs or TACs would be considered significant if the probability of contracting cancer for the Maximally Exposed Individual would exceed 20 in 1 million or would result in a Hazard Index greater than 1 for non-cancer health effects.

6) Odors. Odor impacts associated with the proposed project would be considered significant if the project has the potential to frequently expose members of the public to objectionable odors through development of a new odor source or placement of receptors near an existing odor source.

7) GHGs. In SJVAPCD's *Guidance for Valley Land-Use Agencies in Addressing GHG Emissions Impacts for New Projects Under CEQA*, the District establishes a requirement that land use development projects demonstrate a 29 percent reduction in GHG emissions from Business-As-Usual (BAU).

8) With respect to cumulative air quality impacts, the GAMAQI provides that any proposed project that would individually have a significant air quality impact (i.e., exceed significance thresholds for criteria pollutants ROG, NOx, or PM_{10}) would also be considered to have a significant cumulative impact. In cases where project emissions are all below the applicable significance thresholds, a project may still contribute to a significant cumulative impact if there are other projects nearby whose emissions would combine with project emissions to result in an exceedance of one or more significance thresholds for criteria pollutants.

TABLE 4 SJVAPCD Air Quality Thresholds of Significance – Criteria Pollutant Emission Levels in tons per year (tpy)

Pollutant/Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
Carbon Monoxide (CO)	100	100	100
Nitrogen Oxides (NOx)	10	10	10
Reactive Organic Gases	10	10	10
Sulfur Dioxide (SOx)	27	27	27
Particulate Matter – PM_{10}	15	15	15
Particulate Matter – $PM_{2.5}$	15	15	15
Source: San Joaquin Valley Air Pollution Control District, GAMAQI, Page 80, Table 2 or website at http://www.valleyair.org/transportation/0714-GAMAQI-Criteria-Pollutant-Thresholds-of-Significance.pdf.			

AIR QUALITY IMPACTS

Project-related air quality impacts fall into two categories: short-term impacts due to construction, and long-term impacts due to the proposed project operation. During construction, the proposed project would affect local particulate concentrations primarily due to fugitive dust sources and contribute to ozone and $PM_{10}/PM_{2.5}$ levels due to exhaust emissions. Over the long-term, the proposed project would result in an increase in emissions of ozone precursors such as ROG and NO_x, primarily due to increased motor vehicle trips (employee trips, site deliveries, and onsite maintenance activities).

Impact 1: Construction Dust. Construction activity involves a high potential for the emission of fugitive particulate matter emissions that would affect local air quality. This would be *less-than-significant* with implementation of Regulation VIII.

Construction activities would temporarily affect local air quality, causing a temporary increase in particulate dust and other pollutants. Dust emission during periods of construction would increase particulate concentrations at neighboring properties. This impact is potentially significant, but normally it can be mitigated.

The Project construction activities are anticipated to take place over an approximate 12-month period in 2020 and 2021. Site preparation and disturbance (e.g., vehicle travel on exposed areas) would likely result in the greatest emissions of dust and $PM_{10}/PM_{2.5}$. Windy conditions during construction could cause substantial emissions of $PM_{10}/PM_{2.5}$.

There are no sensitive receptors near the site, as the closest residence is about 5,400 feet away. The SJVAPCD's GAMAQI, emphasizes implementation of effective and comprehensive control measures. SJVAPCD adopted a set of PM_{10} fugitive dust rules collectively called Regulation VIII. This regulation essentially prohibits the emissions of visible dust (limited to 20-percent opacity) and requires that disturbed areas or soils be stabilized. Compliance with Regulation VIII during the construction phase of the proposed project would be required. Prior to construction of each project phase, the applicant would be required to submit a dust control plan that meets the regulation requirements. These plans are reviewed by SJVAPCD and construction cannot begin until District approval is obtained. The provisions of Regulation VIII and its constituent rules pertaining to construction activities generally require:

- Effective dust suppression (e.g., watering) for land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill and demolition activities.
- Effective stabilization of all disturbed areas of a construction site, including storage piles, not used for seven or more days.
- Control of fugitive dust from on-site unpaved roads and off-site unpaved access roads.
- Removal of accumulations of mud or dirt at the end of the workday or once every 24 hours from public paved roads, shoulders and access ways adjacent to the site.
- Cease outdoor construction activities that disturb soils during periods with high winds.
- Record keeping for each day dust control measures are implemented.
- Limit traffic speeds on unpaved roads to 15 mph.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Landscape or replant vegetation in disturbed areas as quickly as possible.
- Prevent the tracking of dirt on public roadways. Limit access to the construction sites, so tracking of mud or dirt on to public roadways can be prevented. If necessary, use wheel

washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site.

- Suspend grading activity when winds (instantaneous gusts) exceed 25 mph or dust clouds cannot be prevented from extending beyond the site.

Anyone who prepares or implements a Dust Control Plan must attend a training course conducted by the District. Construction sites are subject to SJVAPCD inspections under this regulation. Compliance with Regulation VIII, including the effective implementation of a Dust Control Plan that has been reviewed and approved by the SJVAPCD, would reduce dust and PM_{10} emissions to a less-than-significant level.

Impact 2: Construction Exhaust Emissions. Equipment and vehicle trips associated with construction would emit ozone precursor and particulate matter air pollutants on a temporary basis. Construction emissions would be above the GAMAQI significance threshold. This would be a *significant* impact.

Construction equipment exhaust effects air quality both locally and regionally. Emissions of diesel particulate matter, a TAC, can affect local air quality. This impact is discussed under Impact 5. Emissions of air pollutants that could affect regional air quality were addressed by modeling emissions and comparing them to the SJVAPCD significance thresholds. Construction period air pollutant emissions were modeled using the California Emissions Estimator Model, CalEEMod 2016.3.2 model, with project construction information. This model was developed by the South Coast AQMD and other California Air Districts. SJVAPCD recommends the use of this model for construction and operational analysis of land use development projects. The model predicts emissions of ozone precursor pollutants (i.e., ROG and NO_x) and particulate matter (i.e., PM_{10} and $PM_{2.5}$).

Construction build-out scenarios were developed based on the construction schedules, construction vehicle trips, and equipment proposed for use in the project description. Construction emissions were predicted for the construction of the Chestnut Solar Generating Facility construction. The emissions computed using CalEEMod for this assessment address use of construction equipment, worker vehicle travel, on-site vehicle and truck use, and off-site truck travel by vendors or equipment/material deliveries. Both criteria air pollutant exhaust and fugitive dust (i.e., PM_{10} and $PM_{2.5}$) were computed by CalEEMod. Note that the unmitigated CalEEMod modeling does not include the effects of SJVAPCD Regulation VIII that would substantially reduce fugitive PM10 and PM2.5 emissions. Attachment 1 includes the construction assumptions that were used to model emissions. Attachment 2 includes the CalEEMod modeling outputs for construction and operational emissions.

Unmitigated and uncontrolled emissions from all phases of construction are reported in Table 5. As shown, unmitigated construction emissions would exceed the applicable SJVAPCD thresholds for PM_{10} in 2020 and 2021. Since the project could be constructed within a 12-month period over 2020-21, the total emissions of NOx and PM10 (exhaust plus fugitive) would exceed the significance thresholds. Unless mitigated (and controlled under Regulation VIII and Rule 9510), this would represent a significant air quality impact.

The SJVAPCD Indirect Source Review Rule (Rule 9510) applies to construction of the proposed Project. Regardless of whether a project's construction emissions of regional pollutants would exceed the Air District's significance thresholds for each pollutant, the project is still required to comply with Rule 9510, to ensure that the project contributes its fair share of emissions reductions in order to achieve the basin-wide reduction targets established in the Air District's Ozone and PM attainment plans. Rule 9510 requires that the project reduce uncontrolled construction exhaust emissions by 20 percent for NO_x and 45 percent for PM_{10} from calculated unmitigated levels. The basis for the reductions is use of the CalEEMod emissions for statewide construction fleets. Use of newer equipment could result in substantially lower emissions. SJVAPCD encourages reductions through on-site mitigation measures. (Note: The use of the term "mitigation" under Rule 9510 does not refer to mitigation of impacts under CEQA; i.e., the ISR emission reduction percentages are required without regard to whether the CEQA emissions thresholds are exceeded or not.) Fees to purchase or sponsor off-site reductions through SJVAPCD apply when on-site mitigation measures do not achieve the required percentage of emissions reduction. Using less-polluting construction equipment, such as newer equipment or retrofitting older equipment reduces construction emissions on-site. A combination of on-site and off-site measures can be implemented to meet the overall emission reduction requirements. The emissions reported in Table 5 do not include the reductions required by Rule 9510.

The Chestnut facility would be decommissioned at the end of its productive life, after 25 to 30 years of operation. The activities associated with deconstruction would be comparable to construction, but emissions are expected to be substantially lower given anticipated reductions in vehicle and equipment emissions to be phased-in over time per State and federal regulations, and also because of the generally lower intensity of equipment use associated with decommissioning. At the time of decommissioning, emission levels for NOx and ROG are expected to be about 25 percent of construction emissions, and PM_{10} and $PM_{2.5}$ (as exhaust) would be about 45 percent and 23 percent of construction emissions, respectively (Kings County 2012). With the application of Regulation VIII dust control requirements, fugitive PM_{10} emissions are likewise expected to be below the applicable significance thresholds, as they are for construction. Therefore, the emissions associated with project decommissioning would be less than significant.

TABLE 5 Annual Construction Emissions in Tons per Year

Construction Year	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
Uncontrolled Emissions *					
2020	0.35	2.76	2.06	9.75	1.42
2021	1.45	9.70	10.58	50.06	5.78
Total	1.80	12.46	12.64	**59.81**	7.20
Controlled Emissions **					
2020	0.35	2.20	2.06	0.97	0.22
2021	1.45	7.76	10.58	4.89	0.83
Total	1.80	9.96	12.64	5.86	1.05
Significance thresholds	10	10	100	15	-
Uncontrolled ***Controlled***	**No** **No**	**YES** **No**	**No** **No**	**YES** **No**	-

* Values reported for PM_{10} and $PM_{2.5}$ include fugitive dust and diesel exhaust emissions combined. Fugitive dust emissions do not include the effect of measures implemented under Regulation VIII or required by Kings County.
** Includes effect of Regulation VIII but not the effects of applying the Indirect Source Review Rule (9510).

Mitigation Measure AQ-1: All off-road diesel construction equipment greater than 25 horsepower and operating at the site for more than 20 hours shall meet U.S. EPA Tier 3 engine standards for emissions of nitrogen oxides and particulate matter. The effect of this mitigation measure was modeled using CalEEMod.

Effectiveness of Mitigation

Table 5 also reports annual construction period emissions utilizing fugitive dust control measures (e.g., Regulation VIII) and implementation of Mitigation Measure AQ-1. Control measures required by SJVAPCD were selected as mitigation measures in the CalEEMod model. In addition, mitigation measures for equipment usage were selected in CalEEMod that include use of Tier 3 diesel construction equipment. SJVAPCD regulations that would apply to construction activities include Regulation VIII, regarding dust control, Rule 4102, regarding creation of a nuisance, Rule 4601 which limits volatile organic compound emissions from architectural coatings, storage and cleanup, and Rule 4641 which limits emissions form asphalt paving materials. Based on CalEEMod modeling, implementation of Mitigation Measure AQ-1 and measures included in Regulation VIII could reduce NOx emissions by over 20 percent and PM_{10} exhaust emissions by over 80 percent. Use of Tier 4 equipment, would further reduce NOx and PM_{10} exhaust emission from on-site construction equipment. A substantial portion of the mitigated emissions associated with construction would be emitted by haul trucks or vendors that travel both near and away from the project sites. These emissions were assumed to occur entirely within the air basin. These emissions would be unaffected by the application of Mitigation Measure AQ-1.

With implementation of required mitigation measures, construction period emissions of ROG, NO_x CO and PM_{10} would be below the thresholds used by SJVAPCD to judge the significance of construction air quality impacts under CEQA. Thus, while the residual construction-related emissions of ozone precursors and particulates may result in a small decrease in overall air quality, and may therefore have a small adverse health affect (as described earlier in this section under "Criteria Air Pollutants and Their Health Effects"), the overall health impact would be insignificant.

It was previously noted that under Rule 9510 (ISR), the project would be responsible for reducing construction PM_{10} emissions by 45 percent, and NOx emissions by 20 percent. These reductions are required regardless of whether the project emissions exceed the CEQA significance thresholds. This CEQA analysis does not account for ISR reductions, as they are treated separately by the SJVAPCD. (However, it appears that the reductions in emissions that would result from implementation of Mitigation Measure AQ-1 would meet the ISR emissions reduction requirements.) The final emissions calculations for the project will be performed in an Air Impact Assessment (AIA), as required under ISR to determine the specific ISR reductions (i.e., in tons) that will be required for the project.

Impact 3: Operational Emissions. Proposed Project operational emissions, generated primarily by traffic and maintenance equipment, would increase emissions of ozone precursors and particulate matter, but they would be below GAMAQI significance thresholds. These increases would be *less-than-significant*.

The CalEEMod model was also used to estimate annual emissions from operation of the Chestnut Solar Project. The first full year that the Chestnut project could be operational is 2022 and was used as the analysis year. Maintenance vehicle and some off-road equipment usage would occur on-site as well as workers traveling and occasional equipment or vendor deliveries would result in some emissions.

Emissions were computed using the CalEEMod model. Activity input to the model included the on-site travel activity, travel conditions (paved or unpaved), on-site equipment usage and off-site vehicle travel. Note that on-site travel and activity were assumed to occur on unpaved roadways. However, the project would have internal gravel roadways that must be treated with dust palliatives to minimize dust generation.

The effect of the proposed project on regional air quality was evaluated by estimating emissions for the full project operating in 2022. The annual emissions associated with the proposed project are shown in Table 6. Output from CalEEMod is contained in Attachment 1.

Stationary combustion equipment that could emit air pollution during facility operation is not proposed for the project. Photovoltaic energy projects, such as this one, do not usually include these sources. If stationary sources are included in the project at a later date, they may require permits from SJVAPCD. Such sources could include combustion emissions from standby emergency generators (rated 50 horsepower or greater). These sources would normally result in minor emissions, compared to those from traffic generation and off-road maintenance equipment reported above. Sources of stationary air pollutant emissions complying with all applicable SJVAPCD regulations generally will not be considered to have a significant air quality impact. Stationary sources that are exempt from SJVAPCD permit requirements due to low emission thresholds would not be considered to have a significant air quality impact.

As previously mentioned, the project is subject to SJVAPCD's Indirect Source Review or Rule 9510 (ISR) to reduce NO_x and PM_{10} emissions. Although the project's operational emissions of regional pollutants would not exceed the Air District's significance thresholds for each pollutant, as shown in Table 6, the project is still required to comply with Rule 9510, to ensure that the project contributes its share of emissions reductions in order to achieve the basin-wide reduction targets established in the Air District's Ozone and PM_{10} attainment plans. Under Rule 9510, the project would be required to reduce operational NO_x emissions by 33 percent and operational PM_{10} emissions by 50 percent over 10 years. The emissions in Table 6 do not reflect any reductions that may be required under ISR.

TABLE 6 Annual Project Operational Emissions in Tons Per Year

Project	**ROG**	**NO_x**	**CO**	**PM_{10}[1]**	**$PM_{2.5}$[1]**
Operations	0.1	1.2	1.0	5.6	0.6
Significance Thresholds	10	10	100[2]	15	15
Exceed Thresholds?	**No**	**No**	**No**	**No**	**No**

[1]Includes both exhaust and fugitive dust emissions.

[2]Significant if emissions exceed 100 tons per year and then contribute to violation of the NAAQS/CAAQ

Mitigation Measure for Impact 3: None Required

Impact 4: <u>Carbon monoxide concentrations from operational traffic.</u> Mobile emissions generated by project traffic would increase carbon monoxide concentrations at intersections in the project vicinity. However, resulting concentrations would be below ambient air quality standards, and therefore, considered a *less-than-significant* impact.

Project traffic would slightly increase concentrations of carbon monoxide along roadways providing access to the project. Carbon monoxide is a localized air pollutant, where highest concentrations are found very near sources. The major source of carbon monoxide is automobile traffic. Elevated concentrations, therefore, are usually only found near areas of high traffic volume and congestion.

Emissions and ambient concentrations of CO have decreased greatly in recent years. These improvements are due largely to the introduction of cleaner burning motor vehicles and reformulated motor vehicle fuels. No exceedances of the State or federal CO standards have been recorded at any of San Joaquin Valley's monitoring stations in the past 15 years. The San Joaquin Valley Air Basin has attained the State and National CO standards.

However, despite this progress, localized CO concentrations are still a concern in the San Joaquin Valley and are addressed through the SJVAPCD screening method that can be used to determine with fair certainty that the effect a project has on any given intersection would not cause a potential CO hotspot. A project can be said to have no potential to create a CO violation or create a localized hotspot if either of the following conditions are not met: level of service (LOS) on one or more streets or intersections would be reduced to LOS E or F; or the project would substantially worsen an already LOS F street or intersection within the project vicinity. As the proposed project will not do either of these, the potential impact on CO would be considered less than significant.

Mitigation Measure for Impact 4: None Required

Impact 5: <u>Exposure of Sensitive Receptors to Toxic Air Contaminants</u>. Construction activity, delivery trucks, employee traffic and emissions from onsite vehicles used in maintenance activities would expose nearby receptors to toxic air contaminants. Based on the small levels of construction toxic air contaminants and the distance to the nearest sensitive receptor, a screening health risk assessment to assess the potential cancer risk would not be required and the emissions impacts would be *less than significant*.

The Toxic Air Contaminant (TAC) of concern is diesel particulate matter (DPM) emitted from diesel-fueled vehicles and equipment during construction of the project.

For the Chestnut project, the highest daily levels of DPM would be emitted during construction activities from use of heavy-duty diesel equipment such as bulldozers, excavators, loaders, graders and diesel-fueled haul trucks. However, these emissions would be intermittent, vary throughout the project site area, and be of a temporary duration (approximately one year of total construction activity). During project operations, low-level DPM emissions would result from worker vehicles and maintenance activities, but they would be constant over the lifetime of the project. Operational DPM emissions would mainly result from the use of pickup trucks with a portable water trailer (and pump) which would be used for panel cleaning.

Levels of DPM emissions can be generally inferred from PM_{10} emissions, of which diesel exhaust constitutes a substantial component. Table 5, above, shows that PM_{10} emissions from solar project construction would be well below the applicable significance threshold. Table 6, above, shows that PM_{10} emissions from operational activities would be well below the significance threshold.

Because of the relatively small levels of DPM emissions during project construction and operation, and due to the substantial distances to the nearest sensitive receptors (e.g., the nearest residence is at least 1.0 miles from the nearest project boundary), DPM emissions from project construction would disperse to negligible levels, and thus the health impacts associated with exposure to DPM from project construction and operation are not anticipated to be significant. Therefore, the Chestnut Project would result in a *less-than-significant impact* in terms of exposing sensitive receptors to substantial concentrations of Toxic Air Contaminants.

Mitigation Measure for Impact 5: None required.

Impact 6: Odors. The project would result in temporary odors during construction. This impact would be *less-than-significant*.

During construction, the various diesel powered vehicles and equipment in use on-site would create localized odors. These odors would be temporary and not likely to be noticeable for extended periods of time much beyond the project’s site boundaries. The potential for diesel odor impacts is, therefore, less than significant.

During project operations, the project is not expected to generate any objectionable odors. Therefore, the odor impacts associated with operations would be less than significant.

Mitigation Measure for Impact 6: None proposed.

Impact 7: Consistency with Clean Air Planning Efforts. The project would not conflict with the current clean air plan or obstruct its implementation. This would be a *less-than-significant impact*.

The GAMAQI does not include methodologies for assessing the effect of a project on consistency with clean air plans developed by the SJVAPCD. Regional clean air plans developed by SJVAPCD rely on local land use designations to develop population and travel projections that are the basis of future emissions inventories. Air pollution control plans are aimed at reducing these projected future emissions. The project land uses would not alter population and vehicle related emissions projections contained in regional clean air planning efforts in any measurable way, and would not conflict with achievement of the control plans aimed at reducing these projected emissions. Therefore, the project would not conflict with or obstruct implementation of efforts outlined in the region's air pollution control plans to attain or maintain ambient air quality standards. This would be a less-than-significant impact.

Also, as discussed above, in 2005 the SJVAPCD adopted the Indirect Source Review (ISR) Rule in order to fulfill the District's emission reduction commitments in its PM_{10} and Ozone attainment plans. The District has determined that implementation and compliance with the ISR would reduce the cumulative PM_{10} and NO_X impacts of growth anticipated in the air quality plans to a less-than-significant level. Since the project would be required to implement the emissions reductions under ISR, it would fulfill its share of achieving the District's emission reduction commitments in the PM_{10} and Ozone attainment plans. Therefore, the project would result in a *less-than-significant impact* since it would not conflict with or obstruct implementation of the applicable air quality plans.

Mitigation Measure for Impact 7: None required.

CUMULATIVE AIR QUALITY IMPACTS

<u>Methodology</u>

The SJVAPCD has developed criteria to determine if a development Project could result in potentially significant regional emissions. According to the GAMAQI, any proposed project that would individually have a significant air quality impact (i.e., exceed significance thresholds for ROG or NO_x) would also be considered to have a significant cumulative air quality impact. Impacts of local pollutants (CO and TACs) are cumulatively significant when modeling shows that the combined emissions from the project and other existing and planned projects will exceed air quality standards. The GAMAQI further states that "a Lead Agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program, including, but not limited to an air quality attainment or maintenance plan that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located" (SJVAPCD 2015, p. 66). For local impacts of PM_{10} from unrelated construction projects, the GAMAQI recommends a qualitative approach where construction activities from unrelated projects in the area should be examined to determine if enhanced dust suppression measures are necessary.

<u>Regional Air Pollutants</u>

As discussed under 'Significance Criteria" above, cumulative ozone impacts would be considered significant - if the project-specific emissions exceed the SJVAPCD significance thresholds for ozone precursors ROG or NO_x, or the project is not consistent with the regional clean air plan. As discussed in Impact 2 (and shown in Table 5) above, project-specific construction emissions of ozone precursor pollutants (ROG and NO_x) and PM were found to be less-than-significant after mitigation. As discussed in Impact 3 (and shown in Table 6) above, project-specific operational emissions of ozone precursor pollutants (ROG and NO_x) and PM were found to be less-than-significant without mitigation. As discussed under Impact 7 above, the project would be consistent with clean air planning efforts and would not conflict with or obstruct their implementation. Therefore, the project contribution to cumulative regional air quality impacts would be less than significant.

Local Air Pollutant Emissions

Construction period PM_{10} emissions would be localized. With implementation of SJVAPCD Regulation VIII, construction period impacts would be less than significant. Additional construction that may occur in the area concurrently with the project would be subject to SJVAPCD Regulation VIII, as well as the District's Indirect Source Review Rule 9510, which would reduce cumulative construction emissions to less-than-significant levels.

In summary, the cumulative project impacts to localized air quality impacts would be less-than-significant.

Cumulative Toxic Air Pollutant Impacts

As discussed above, the project would not have a significant impact related to community health risk from project construction or operation and, therefore, would also not contribute to a cumulatively considerable community risk impact in the project vicinity.

Summary of Cumulative Contribution to Air Quality Impacts

The project would not contribute to local cumulative air quality impacts with respect to any standard or significance criteria. In addition, the project's contribution to cumulative regional air quality impacts would be less than considerable. In conclusion, the project would not have a cumulatively significant impact on air quality.

GHG Emissions

GHG emissions in terms of CO_2e are low for both the construction and operational phases of the proposed project. A photovoltaic power production facility inherently represents "best performance standards" as compared to other typical forms of electrical power production, i.e., such as fossil-fueled power plants. The operation of the project would provide electric power with negligible GHG emissions over the life of the project compared with traditional fossil-fueled power plants. Therefore, the project is consistent with State GHG policy to encourage solar power development as a means to reduce fossil fuels and GHG emissions and improve air quality. GHG Emissions are reported in Table 7 for both construction and operation of the project.

TABLE 7 Annual Project GHG Emissions in Metric Tons Per Year

Phase	GHG Emissions
2020 Construction Activity	655
2021 Construction Activity + ¼-Operation	4,587
2022 Operation	243

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Attachment 1: Activity Assumptions used for CalEEMod Modeling

Chestnut Solar - Construction - Off-Site Vehicle Usage - 3/15/2019

Vehicles	Estimated Usage			Traffic Calculations						Schedule
	Units	Miles/Round Trip	Round Trips per Unit	Type	#Trips					Overall - 12 months
			150 MW SGF	(worker, vendor, haul)						Oct 1, 2020 - Sept 30, 2021
Phase 1 – Site Preparation						Mileage		Trips	Distance	
Water Trucks	5	85	1	Haul	5	425	Worker =	166	90	Phase 1 - 105 workdays/21 weeks
Flat Bed Trucks	12	85	3	Vendor	36	3,060	Vendor =	0.3	85	Octl 1, 2020 - Feb 10, 2021
Gravel Trucks (End Dump)(Delivery)	22	56	105	Haul	2,310	129,360	Haul =	2747	61	
Equipment Transport Trucks (Delivery)	24	85	18	Haul	432	36,720				
Worker Vehicles	166	90	105	Worker	17,430	1,568,700				
Phase 2 – Installation of Solar Arrays										Phase 2 - 150 workdays/30 weeks
Water Trucks	4	85	1	Haul	4	340	Worker =	418	90	Jan 1, 2021 - July 10, 2021
Freight Trucks (Delivery)	22	400	140	Haul	3,080	1,232,000	Vendor =	4	85	(6 week overlap with Phase 1)
Equipment Transport Trucks (Delivery)	7	85	6	Haul	42	3,570	Haul =	3126	395	
Service Trucks	4	85	140	Vendor	560	47,600				
Worker Vehicles	348	90	180	Worker	62,640	5,637,600				
Phase 3 – Installation of Inverters, Transformers, Substation, Interconnection										Phase 3 -75 workdays/15 weeks
Water Trucks	1	75	1	Haul	1	75	Worker =	48	90	June 1, 2021 - Sept 30, 2021
Ready Mix (Delivery)	4	50	125	Vendor	500	25,000	Vendor =	7	85	(7 week overlap with Phase 2)
Freight (Delivery)	1	400	90	Haul	90	36,000	Haul =	103	360	
Equipment Transport Trucks (Delivery)	1	85	12	Haul	12	1,020				
Worker Vehicles	48	90	75	Worker	3,600	324,000				

Source: Tranquillity

Chestnut Solar - Construction - On-Site Equipment Usage

Equipment	Estimated Usage		Equipment Usage Calculations				Schedule
	Units	Hours/Day (5 days/week)	Days per Unit 150 MW SGF	Avg hrs/day			Overall - 12 months
Phase 1 – Site Preparation							Oct 1, 2020 - Sept 30, 2021
Water Trucks	5	7	105	7.0	105	mi	
Bulldozers	4	7	105	7.0			Phase 1 - 105 workdays/21 weeks
Graders	5	7	65	4.3			Octl 1, 2020 - Feb 10, 2021
Compactors	1	7	25	1.7			
Skid Loaders	1	7	105	7.0			
Asphalt Pavers	1	4	17	0.6			
Front-End Loaders	1	7	50	3.3			
Phase 2 – Installation of Solar Arrays							Phase 2 - 150 workdays/30 weeks
Water Trucks	1	7	150	7.0	105	mi	Jan 1, 2021 - July 10, 2021
Tractors – post drivers	2	7	147	6.9			(6 week overlap with Phase 1)
Forklifts	6	7	132	6.2			
Trenchers	9	4	147	3.9			
Flat Bed Trucks	12	7	132	6.2			
Phase 3 – Installation of Inverters, Transformers, Substation, Interconnection							Phase 3 -75 workdays/15 weeks
Water Trucks	1	7	75	7.0	105	mi	June 1, 2021 - Sept 30, 2021
Forklifts	2	4	70	3.7			(7 week overlap with Phase 2)
Trenchers	1	4	75	4.0			
Backhoes	1	4	75	4.0			
Cranes	1	2	48	1.3			
Aerial Lifts	1	6	48	3.8			

CHESTNUT SOLAR - OPERATIONAL VEHICLE AND EQUIPMENT USE

Chestnut Solar - Operations - On-Site Vehicle and Equipment Usage

Equipment and Vehicle Usage During Chestnut Solar Facility Operations and Maintenance

	Estimated Usage (Annual)				
Equipment	**Units**	**Hours/Day/Unit**	**Total Days/Unit/Year**	hours/day	
All-Terrain Vehicle (ATV)	2	4	5	0.1	
Tractor	1	8	100	2.2	
Portable Generator	1	8	60	1.3	
Portable Water Trailer w/Pump	3	8	80	1.8	
Vehicles	**Units**	**Daily Miles/ Unit**	**Total Days/ Unit/Year**		
Pickup Truck (Routine O&M)	5	30	130	1300	19500
Pickup Truck (Panel Washing)	10	40	80	1600	32000
Source: Recurrent				2900	51500
				7.95	17.8
				trip/day	mi/trip
				90% on dirt	

Chestnut Solar - Operations - Off-Site Vehicle Usage

Personnel Commuting to Chestnut Solar Facility

	Estimated Annual			Miles/Round Trip		
Personnel	**Workers**	**Days**	**Round Trips**		trips	vmt
Permanent	1.5	252	380	68	760	25,840
Repair Crew	20	15	300	68	600	20,400
Shepherds	2	110	220	68	440	14,960
Panel Washing Crew	15	40	600	68	1,200	40,800
Total Annual Round Trips			1,500			
Source: Kings County CUPs						
					3,000	102,000
					8.22	34
					trip/day	mi/trip
					on paved	

Total		
	16.16	**trip/day**
	26.02	**mi/trip**
	30%	**% on dirt (on-site)**

Attachment 2: CalEEMod Output

Chestnut Project, Kings Co
Kings County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1,040.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	37
Climate Zone	3			**Operational Year**	2022
Utility Company	Statewide Average				
CO2 Intensity (lb/MWhr)	1001.57	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreage from PD

Construction Phase - Phases and durations from BV. Some overlap of phases. 12-month total

Off-road Equipment - applicant provided equipment and hours

Off-road Equipment - Applicant provided equipment and hours

Off-road Equipment - Applicant provided equipment and hours crawler tract = compactor

Trips and VMT - Applicant provided trips - added water trucks as 1 vendor trip/day ea. phase

On-road Fugitive Dust - Assume 0.5mi each way on dirt. Most paved travel on Collectors, Arterials and Freeways Road SL =0.035

Grading - default conditions

Vehicle Trips - 16.16 trips per avg day and 26mi/trip for both on- and off-site travel

Road Dust - Assume all on-site travel on dirt (30%). Off site on highways (70%). Roads treated with pallatives or watered

Construction Off-road Equipment Mitigation - Use Tier 4f/Tier 3 and road pallatives plus best available dust controls

Operational Off-Road Equipment - assume ATVs negligible (operate 0.1 hrs per day)

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
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tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	155,000.00	150.00

tblConstructionPhase	NumDays	155,000.00	75.00
tblConstructionPhase	NumDays	6,000.00	105.00
tblGrading	AcresOfGrading	152.25	166.03
tblLandUse	LotAcreage	0.00	1,040.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	1.30
tblOffRoadEquipment	UsageHours	8.00	5.00
tblOffRoadEquipment	UsageHours	8.00	3.70
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	7.00	6.90
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	99.70
tblOnRoadDust	HaulingPercentPave	100.00	99.70
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	VendorPercentPave	100.00	99.00
tblOnRoadDust	VendorPercentPave	100.00	99.00
tblOnRoadDust	VendorPercentPave	100.00	99.00

tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	2.20
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	1.30
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	1.80
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	5.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	MaterialMoistureContent	0.5	12
tblRoadDust	MeanVehicleSpeed	40	15
tblRoadDust	RoadPercentPave	100	70
tblTripsAndVMT	HaulingTripLength	20.00	61.00
tblTripsAndVMT	HaulingTripLength	20.00	395.00
tblTripsAndVMT	HaulingTripLength	20.00	360.00
tblTripsAndVMT	HaulingTripNumber	0.00	2,747.00
tblTripsAndVMT	HaulingTripNumber	0.00	3,126.00
tblTripsAndVMT	HaulingTripNumber	0.00	103.00
tblTripsAndVMT	VendorTripLength	6.60	85.00
tblTripsAndVMT	VendorTripLength	6.60	85.00
tblTripsAndVMT	VendorTripLength	6.60	85.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	WorkerTripLength	16.80	90.00
tblTripsAndVMT	WorkerTripLength	16.80	90.00
tblTripsAndVMT	WorkerTripLength	16.80	90.00
tblTripsAndVMT	WorkerTripNumber	33.00	166.00
tblTripsAndVMT	WorkerTripNumber	0.00	418.00

tblTripsAndVMT	WorkerTripNumber	0.00	48.00
tblVehicleTrips	CC_TL	6.60	26.01
tblVehicleTrips	CNW_TL	6.60	26.01
tblVehicleTrips	CNW_TTP	0.00	100.00
tblVehicleTrips	CW_TL	14.70	26.01
tblVehicleTrips	HO_TL	0.00	26.01
tblVehicleTrips	HS_TL	0.00	26.01
tblVehicleTrips	HW_TL	0.00	26.01
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	0.00	16.01
tblVehicleTrips	SU_TR	0.00	16.01
tblVehicleTrips	WD_TR	0.00	16.01

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.3505	2.7551	2.0638	7.1800e-003	9.6555	0.0927	9.7482	1.3346	0.0854	1.4200	0.0000	653.7537	653.7537	0.0672	0.0000	655.4337
2021	1.4478	9.6964	10.5823	0.0489	49.8331	0.2250	50.0581	5.5728	0.2081	5.7809	0.0000	4,521.6054	4,521.6054	0.1795	0.0000	4,526.0918
Maximum	**1.4478**	**9.6964**	**10.5823**	**0.0489**	**49.8331**	**0.2250**	**50.0581**	**5.5728**	**0.2081**	**5.7809**	**0.0000**	**4,521.6054**	**4,521.6054**	**0.1795**	**0.0000**	**4,526.0918**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.2153	1.5864	2.3027	7.1800e-003	0.9701	0.0385	1.0085	0.2085	0.0382	0.2466	0.0000	653.7535	653.7535	0.0672	0.0000	655.4335
2021	1.2205	8.3617	10.7316	0.0489	4.8863	0.1473	5.0336	0.8302	0.1449	0.9751	0.0000	4,521.6050	4,521.6050	0.1795	0.0000	4,526.0915
Maximum	**1.2205**	**8.3617**	**10.7316**	**0.0489**	**4.8863**	**0.1473**	**5.0336**	**0.8302**	**0.1449**	**0.9751**	**0.0000**	**4,521.6050**	**4,521.6050**	**0.1795**	**0.0000**	**4,526.0915**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**20.16**	**20.10**	**-3.07**	**0.00**	**90.16**	**41.54**	**89.90**	**84.96**	**37.61**	**83.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**
1	**10-1-2020**	**12-31-2020**	3.1337	1.8355
2	**1-1-2021**	**3-31-2021**	5.6449	4.5901
3	**4-1-2021**	**6-30-2021**	3.8714	3.5130
4	**7-1-2021**	**9-30-2021**	1.6150	1.4610
		Highest	5.6449	4.5901

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0119	0.1608	0.1578	9.3000e-004	5.5246	8.3000e-004	5.5255	0.5531	7.8000e-004	0.5539	0.0000	86.4138	86.4138	4.2500e-003	0.0000	86.5200
Offroad	0.1006	0.9875	0.8666	1.8000e-003		0.0452	0.0452		0.0439	0.0439	0.0000	155.7753	155.7753	0.0213	0.0000	156.3072

Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1125**	**1.1483**	**1.0244**	**2.7300e-003**	**5.5246**	**0.0460**	**5.5706**	**0.5531**	**0.0447**	**0.5977**	**0.0000**	**242.1891**	**242.1891**	**0.0255**	**0.0000**	**242.8272**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0119	0.1608	0.1578	9.3000e-004	5.5246	8.3000e-004	5.5255	0.5531	7.8000e-004	0.5539	0.0000	86.4138	86.4138	4.2500e-003	0.0000	86.5200
Offroad	0.1006	0.9875	0.8666	1.8000e-003		0.0452	0.0452		0.0439	0.0439	0.0000	155.7753	155.7753	0.0213	0.0000	156.3072
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1125**	**1.1483**	**1.0244**	**2.7300e-003**	**5.5246**	**0.0460**	**5.5706**	**0.5531**	**0.0447**	**0.5977**	**0.0000**	**242.1891**	**242.1891**	**0.0255**	**0.0000**	**242.8272**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	10/1/2020	2/24/2021	5	105	

2	Installation of Solar Arrays	Building Construction	1/1/2021	7/29/2021	5	150	some overlap
3	Installation of Inverters, Transformers, Substation	Building Construction	6/1/2021	9/13/2021	5	75	some overlap

Acres of Grading (Site Preparation Phase): 166.03

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Crawler Tractors	1	1.70	212	0.43
Site Preparation	Graders	5	4.30	187	0.41
Site Preparation	Pavers	1	0.60	130	0.42
Site Preparation	Rubber Tired Dozers	4	7.00	247	0.40
Site Preparation	Rubber Tired Loaders	1	3.30	203	0.36
Site Preparation	Skid Steer Loaders	1	7.00	65	0.37
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Installation of Solar Arrays	Cranes	0	7.00	231	0.29
Installation of Solar Arrays	Forklifts	6	5.00	89	0.20
Installation of Solar Arrays	Generator Sets	0	8.00	84	0.74
Installation of Solar Arrays	Tractors/Loaders/Backhoes	2	6.90	97	0.37
Installation of Solar Arrays	Trenchers	9	3.90	78	0.50
Installation of Solar Arrays	Welders	0	8.00	46	0.45
Installation of Inverters, Transformers, Substation, Interconnection	Aerial Lifts	1	3.80	63	0.31
Installation of Inverters, Transformers, Substation, Interconnection	Cranes	1	1.30	231	0.29
Installation of Inverters, Transformers, Substation, Interconnection	Forklifts	2	3.70	89	0.20
Installation of Inverters, Transformers, Substation, Interconnection	Generator Sets	0	8.00	84	0.74
Installation of Inverters, Transformers, Substation, Interconnection	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Installation of Inverters, Transformers, Substation, Interconnection	Trenchers	1	4.00	78	0.50
Installation of Inverters, Transformers, Substation, Interconnection	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	13	166.00	2.00	2,747.00	90.00	85.00	61.00	LD_Mix	HDT_Mix	HHDT
Installation of Solar Arrays	17	418.00	5.00	3,126.00	90.00	85.00	395.00	LD_Mix	HDT_Mix	HHDT
Installation of Inverters	6	48.00	8.00	103.00	90.00	85.00	360.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7836	0.0000	0.7836	0.3918	0.0000	0.3918	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1790	2.0198	0.7252	1.7900e-003		0.0877	0.0877		0.0807	0.0807	0.0000	156.9754	156.9754	0.0508	0.0000	158.2447
Total	**0.1790**	**2.0198**	**0.7252**	**1.7900e-003**	**0.7836**	**0.0877**	**0.8713**	**0.3918**	**0.0807**	**0.4725**	**0.0000**	**156.9754**	**156.9754**	**0.0508**	**0.0000**	**158.2447**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0175	0.5495	0.0848	1.8700e-003	2.2274	2.3900e-003	2.2298	0.2309	2.2900e-003	0.2332	0.0000	177.7106	177.7106	5.7800e-003	0.0000	177.8550
Vendor	1.9900e-003	0.0456	9.5800e-003	1.7000e-004	0.0757	4.4000e-004	0.0761	8.3700e-003	4.2000e-004	8.7900e-003	0.0000	16.1969	16.1969	3.1000e-004	0.0000	16.2046
Worker	0.1520	0.1402	1.2442	3.3500e-003	6.5689	2.2200e-003	6.5711	0.7035	2.0400e-003	0.7055	0.0000	302.8708	302.8708	0.0104	0.0000	303.1295
Total	**0.1715**	**0.7353**	**1.3386**	**5.3900e-003**	**8.8719**	**5.0500e-003**	**8.8770**	**0.9427**	**4.7500e-003**	**0.9475**	**0.0000**	**496.7782**	**496.7782**	**0.0164**	**0.0000**	**497.1890**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1763	0.0000	0.1763	0.0882	0.0000	0.0882	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0438	0.8511	0.9642	1.7900e-003		0.0334	0.0334		0.0334	0.0334	0.0000	156.9753	156.9753	0.0508	0.0000	158.2445
Total	**0.0438**	**0.8511**	**0.9642**	**1.7900e-003**	**0.1763**	**0.0334**	**0.2097**	**0.0882**	**0.0334**	**0.1216**	**0.0000**	**156.9753**	**156.9753**	**0.0508**	**0.0000**	**158.2445**

Mitigated Construction Off-Site

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Hauling	0.0175	0.5495	0.0848	1.8700e-003	0.1780	2.3900e-003	0.1804	0.0240	2.2900e-003	0.0263	0.0000	177.7106	177.7106	5.7800e-003	0.0000	177.8550
Vendor	1.9900e-003	0.0456	9.5800e-003	1.7000e-004	7.8500e-003	4.4000e-004	8.2900e-003	1.4400e-003	4.2000e-004	1.8600e-003	0.0000	16.1969	16.1969	3.1000e-004	0.0000	16.2046
Worker	0.1520	0.1402	1.2442	3.3500e-003	0.6079	2.2200e-003	0.6102	0.0948	2.0400e-003	0.0969	0.0000	302.8708	302.8708	0.0104	0.0000	303.1295
Total	**0.1715**	**0.7353**	**1.3386**	**5.3900e-003**	**0.7938**	**5.0500e-003**	**0.7988**	**0.1203**	**4.7500e-003**	**0.1250**	**0.0000**	**496.7782**	**496.7782**	**0.0164**	**0.0000**	**497.1890**

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4990	0.0000	0.4990	0.2354	0.0000	0.2354	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1018	1.1402	0.4191	1.0500e-003		0.0492	0.0492		0.0452	0.0452	0.0000	92.7102	92.7102	0.0300	0.0000	93.4598
Total	**0.1018**	**1.1402**	**0.4191**	**1.0500e-003**	**0.4990**	**0.0492**	**0.5482**	**0.2354**	**0.0452**	**0.2807**	**0.0000**	**92.7102**	**92.7102**	**0.0300**	**0.0000**	**93.4598**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.7200e-003	0.2930	0.0482	1.0900e-003	2.2228	1.2300e-003	2.2240	0.2292	1.1800e-003	0.2304	0.0000	103.7491	103.7491	3.3500e-003	0.0000	103.8327
Vendor	9.4000e-004	0.0231	4.8300e-003	1.0000e-004	0.0447	1.4000e-004	0.0449	4.9400e-003	1.3000e-004	5.0700e-003	0.0000	9.4890	9.4890	1.7000e-004	0.0000	9.4932
Worker	0.0830	0.0737	0.6652	1.9200e-003	3.8816	1.2700e-003	3.8829	0.4157	1.1700e-003	0.4169	0.0000	173.6058	173.6058	5.4400e-003	0.0000	173.7419
Total	**0.0937**	**0.3898**	**0.7182**	**3.1100e-003**	**6.1491**	**2.6400e-003**	**6.1517**	**0.6498**	**2.4800e-003**	**0.6523**	**0.0000**	**286.8439**	**286.8439**	**8.9600e-003**	**0.0000**	**287.0679**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1123	0.0000	0.1123	0.0530	0.0000	0.0530	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0259	0.5029	0.5697	1.0500e-003		0.0198	0.0198		0.0198	0.0198	0.0000	92.7101	92.7101	0.0300	0.0000	93.4597
Total	**0.0259**	**0.5029**	**0.5697**	**1.0500e-003**	**0.1123**	**0.0198**	**0.1320**	**0.0530**	**0.0198**	**0.0727**	**0.0000**	**92.7101**	**92.7101**	**0.0300**	**0.0000**	**93.4597**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.7200e-003	0.2930	0.0482	1.0900e-003	0.1733	1.2300e-003	0.1746	0.0223	1.1800e-003	0.0235	0.0000	103.7491	103.7491	3.3500e-003	0.0000	103.8327
Vendor	9.4000e-004	0.0231	4.8300e-003	1.0000e-004	4.6400e-003	1.4000e-004	4.7700e-003	8.5000e-004	1.3000e-004	9.8000e-004	0.0000	9.4890	9.4890	1.7000e-004	0.0000	9.4932
Worker	0.0830	0.0737	0.6652	1.9200e-003	0.3592	1.2700e-003	0.3605	0.0560	1.1700e-003	0.0572	0.0000	173.6058	173.6058	5.4400e-003	0.0000	173.7419
Total	**0.0937**	**0.3898**	**0.7182**	**3.1100e-003**	**0.5372**	**2.6400e-003**	**0.5398**	**0.0792**	**2.4800e-003**	**0.0817**	**0.0000**	**286.8439**	**286.8439**	**8.9600e-003**	**0.0000**	**287.0679**

3.3 Installation of Solar Arrays - 2021

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Off-Road	0.1865	1.7326	1.4785	1.9400e-003		0.1219	0.1219		0.1122	0.1122	0.0000	170.6782	170.6782	0.0552	0.0000	172.0583
Total	**0.1865**	**1.7326**	**1.4785**	**1.9400e-003**		**0.1219**	**0.1219**		**0.1122**	**0.1122**	**0.0000**	**170.6782**	**170.6782**	**0.0552**	**0.0000**	**172.0583**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.1758	4.9476	0.8805	0.0205	2.5821	0.0240	2.6061	0.3348	0.0230	0.3578	0.0000	1,949.5915	1,949.5915	0.0193	0.0000	1,950.0730
Vendor	9.0100e-003	0.2223	0.0465	9.6000e-004	0.4300	1.3000e-003	0.4313	0.0476	1.2500e-003	0.0488	0.0000	91.2403	91.2403	1.6100e-003	0.0000	91.2805
Worker	0.8040	0.7136	6.4425	0.0186	37.5929	0.0123	37.6052	4.0259	0.0114	4.0373	0.0000	1,681.3540	1,681.3540	0.0527	0.0000	1,682.6721
Total	**0.9888**	**5.8835**	**7.3695**	**0.0401**	**40.6050**	**0.0376**	**40.6426**	**4.4083**	**0.0356**	**4.4439**	**0.0000**	**3,722.1858**	**3,722.1858**	**0.0736**	**0.0000**	**3,724.0256**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Off-Road	0.0476	1.0865	1.4672	1.9400e-003		0.0761	0.0761		0.0761	0.0761	0.0000	170.6780	170.6780	0.0552	0.0000	172.0581

Total	**0.0476**	**1.0865**	**1.4672**	**1.9400e-003**		**0.0761**	**0.0761**		**0.0761**	**0.0761**	**0.0000**	**170.6780**	**170.6780**	**0.0552**	**0.0000**	**172.0581**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1758	4.9476	0.8805	0.0205	0.4637	0.0240	0.4877	0.1062	0.0230	0.1291	0.0000	1,949.5915	1,949.5915	0.0193	0.0000	1,950.0730
Vendor	9.0100e-003	0.2223	0.0465	9.6000e-004	0.0446	1.3000e-003	0.0459	8.2000e-003	1.2500e-003	9.4400e-003	0.0000	91.2403	91.2403	1.6100e-003	0.0000	91.2805
Worker	0.8040	0.7136	6.4425	0.0186	3.4792	0.0123	3.4915	0.5427	0.0114	0.5541	0.0000	1,681.3540	1,681.3540	0.0527	0.0000	1,682.6721
Total	**0.9888**	**5.8835**	**7.3695**	**0.0401**	**3.9875**	**0.0376**	**4.0251**	**0.6571**	**0.0356**	**0.6927**	**0.0000**	**3,722.1858**	**3,722.1858**	**0.0736**	**0.0000**	**3,724.0256**

3.4 Installation of Inverters, Transformers, Substation,

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0184	0.1826	0.1633	2.4000e-004		0.0112	0.0112		0.0103	0.0103	0.0000	21.0539	21.0539	6.8100e-003	0.0000	21.2242
Total	**0.0184**	**0.1826**	**0.1633**	**2.4000e-004**		**0.0112**	**0.0112**		**0.0103**	**0.0103**	**0.0000**	**21.0539**	**21.0539**	**6.8100e-003**	**0.0000**	**21.2242**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.2900e-003	0.1490	0.0265	6.2000e-004	0.0775	7.2000e-004	0.0783	0.0101	6.9000e-004	0.0107	0.0000	58.6040	58.6040	6.0000e-004	0.0000	58.6191
Vendor	7.2100e-003	0.1778	0.0372	7.7000e-004	0.3440	1.0400e-003	0.3450	0.0380	1.0000e-003	0.0390	0.0000	72.9923	72.9923	1.2800e-003	0.0000	73.0244
Worker	0.0462	0.0410	0.3699	1.0700e-003	2.1584	7.1000e-004	2.1592	0.2312	6.5000e-004	0.2318	0.0000	96.5371	96.5371	3.0300e-003	0.0000	96.6128
Total	**0.0587**	**0.3678**	**0.4336**	**2.4600e-003**	**2.5800**	**2.4700e-003**	**2.5824**	**0.2793**	**2.3400e-003**	**0.2816**	**0.0000**	**228.1333**	**228.1333**	**4.9100e-003**	**0.0000**	**228.2562**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.8800e-003	0.1312	0.1734	2.4000e-004		8.6600e-003	8.6600e-003		8.6600e-003	8.6600e-003	0.0000	21.0539	21.0539	6.8100e-003	0.0000	21.2241
Total	**5.8800e-003**	**0.1312**	**0.1734**	**2.4000e-004**		**8.6600e-003**	**8.6600e-003**		**8.6600e-003**	**8.6600e-003**	**0.0000**	**21.0539**	**21.0539**	**6.8100e-003**	**0.0000**	**21.2241**

Mitigated Construction Off-Site

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

Hauling	5.2900e-003	0.1490	0.0265	6.2000e-004	0.0139	7.2000e-004	0.0147	3.1900e-003	6.9000e-004	3.8800e-003	0.0000	58.6040	58.6040	6.0000e-004	0.0000	58.6191
Vendor	7.2100e-003	0.1778	0.0372	7.7000e-004	0.0357	1.0400e-003	0.0367	6.5600e-003	1.0000e-003	7.5500e-003	0.0000	72.9923	72.9923	1.2800e-003	0.0000	73.0244
Worker	0.0462	0.0410	0.3699	1.0700e-003	0.1998	7.1000e-004	0.2005	0.0312	6.5000e-004	0.0318	0.0000	96.5371	96.5371	3.0300e-003	0.0000	96.6128
Total	**0.0587**	**0.3678**	**0.4336**	**2.4600e-003**	**0.2494**	**2.4700e-003**	**0.2518**	**0.0409**	**2.3400e-003**	**0.0432**	**0.0000**	**228.1333**	**228.1333**	**4.9100e-003**	**0.0000**	**228.2562**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0119	0.1608	0.1578	9.3000e-004	5.5246	8.3000e-004	5.5255	0.5531	7.8000e-004	0.5539	0.0000	86.4138	86.4138	4.2500e-003	0.0000	86.5200
Unmitigated	0.0119	0.1608	0.1578	9.3000e-004	5.5246	8.3000e-004	5.5255	0.5531	7.8000e-004	0.5539	0.0000	86.4138	86.4138	4.2500e-003	0.0000	86.5200

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	16.01	16.01	16.01	151,577	151,577
Total	16.01	16.01	16.01	151,577	151,577

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

User Defined Industrial	26.01	26.01	26.01	0.00	0.00	100.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.498687	0.027849	0.148828	0.115015	0.018545	0.004394	0.011831	0.164059	0.001725	0.001770	0.005665	0.000943	0.000690

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

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

5.3 Energy by Land Use - Electricity

Unmitigated

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

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

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

6.2 Area by SubCategory

Unmitigated

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

Mitigated

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

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e

Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

8.2 Waste by Land Use

Unmitigated

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

Mitigated

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

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Crawler Tractors	2	2.20	260	212	0.43	Diesel
Generator Sets	2	1.30	260	84	0.74	Diesel
Pumps	5	1.80	260	84	0.74	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Crawler Tractors	0.0352	0.4296	0.1655	5.6000e-004		0.0162	0.0162		0.0149	0.0149	0.0000	49.2337	49.2337	0.0159	0.0000	49.6317
Generator Sets	0.0139	0.1237	0.1553	2.8000e-004		6.2100e-003	6.2100e-003		6.2100e-003	6.2100e-003	0.0000	23.8800	23.8800	1.1300e-003	0.0000	23.9084
Pumps	0.0515	0.4342	0.5458	9.6000e-004		0.0228	0.0228		0.0228	0.0228	0.0000	82.6616	82.6616	4.2200e-003	0.0000	82.7670
Total	**0.1006**	**0.9875**	**0.8666**	**1.8000e-003**		**0.0452**	**0.0452**		**0.0439**	**0.0439**	**0.0000**	**155.7753**	**155.7753**	**0.0213**	**0.0000**	**156.3072**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators