SECTION 4.5

CLIMATE CHANGE AND GREENHOUSE GASES

This section provides an analysis of potential climate change and greenhouse gases (GHG) impacts related to construction, operation, and maintenance of the proposed Project. Information in this section is derived from California Air Resources Board (CARB), California Public Utility Commission (CPUC), and California Energy Commission (CEC) sources, as well information provided in the "Air Pollutant Emission Assessment, Seville Solar Farm Complex Construction, Imperial County, California" (EMA 2013c), "Air Pollutant Emission Assessment, Seville Solar Farm Complex Operations, Imperial County, California" (EMA 2013d), and "Air Pollutant Emission Assessment, Anza Substation Expansion, Imperial County, California" (EMA 2014b), prepared by Environmental Management Associates.

A brief introduction to greenhouse gases and climate change is provided to lay the foundation for understanding the discussion and analysis that follows.

Greenhouse Gases and Climate Change

Atmospheric gases that absorb and emit infrared radiation are called greenhouse gases (GHG). GHGs act as effective global insulators allowing solar radiation (sunlight) into the Earth's atmosphere and preventing radiative heat from escaping thereby warming the Earth's atmosphere. Another way of understanding GHGs is as a collection of atmospheric gases that act like a "blanket" around the earth by "trapping" heat like the glass wall of a greenhouse.

Common GHGs include carbon dioxide (CO_2), water vapor (H_2O), methane (CH_4), nitrous oxide (N_2O), fluorinated gases, and ozone (O_3). Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely byproducts of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills.

Man-made GHGs include fluorinated gases such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These gases have greater heat-absorption potential than CO_2. As a result, these compounds increase the natural concentration of GHGs in the atmosphere and are commonly believed to result in a phenomenon referred to as "global warming" or "global climate change" (GCC). A warmer Earth may lead to changes in rainfall patterns, much smaller polar ice caps, a rise in sea level, and a wide range of impacts on plants, wildlife, and humans.

Terminology unique to this chapter includes: carbon dioxide equivalents (CO_2e), a term used to describe the concentration of CO_2 that would cause the same level of radiative forcing (i.e., the change in net irradiance between different layers of the atmosphere) as a given type and concentration of GHG, and two units of measures, metric tons (MT) and million metric tons (MMT).

4.5.1 REGULATORY FRAMEWORK

BACKGROUND

In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change (IPCC) to assess "the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation." The most recent reports of the IPCC have emphasized the scientific consensus that real and measurable changes to the climate are occurring, that they are caused by human activity (i.e. anthropogenic), and that significant adverse impacts on the environment, the economy, and human health and welfare are unavoidable.

The United States (U.S.) joined other countries around the world in signing the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC was entered on March 21, 1994. Under the convention, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected

impacts (including the provision of financial and technological support to developing countries); and cooperate in preparing for adaptation to the impacts of climate change.

The Kyoto Protocol is a treaty made under the UNFCCC. Countries can sign the treaty to demonstrate their commitment to reduce their emissions of GHGs or engage in emissions trading. More than 160 countries, 55 percent of global emissions, are under the protocol. Former U.S. Vice President Al Gore symbolically signed the Protocol in 1998. However, in order for the Kyoto Protocol to be formally adopted, or ratified, it must be adopted by the U.S. Senate, which was not done by the Clinton administration. To date, the U.S. has not ratified the Kyoto Protocol.

A. FEDERAL

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) is the federal agency responsible for implementing the Clean Air Act (CAA). In response to the mounting issue of climate change, the EPA has taken actions to regulate, monitor, and potentially reduce GHG emissions.

Greenhouse Gas Endangerment

Massachusetts v. EPA (Supreme Court Case 05-1120) was argued before the U.S. Supreme Court on November 29, 2006, in which it was petitioned that the EPA regulate four GHGs, including carbon dioxide, under Section 202(a)(1) of the CCA. A decision was made on April 2, 2007, in which the Supreme Court found that GHGs are air pollutants covered by the CCA. The Court held that the Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the CCA:

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

Mandatory Reporting of Greenhouse Gases

The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule. The rule requires reporting of GHG emissions from large sources and suppliers in the U.S., and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the EPA.

EPA Greenhouse Gas Tailor Rule - New Source Review

On May 13, 2010, the EPA issued a final rule establishing thresholds for GHGs defining when permits are required for new and existing industrial facilities under the New Source Review (NSR) Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs. This final rule "tailors" the requirements of these CAA permitting programs to limit which facilities will be required to obtain PSD

and Title V permits. In the preamble to the revisions to the Code of Federal Regulations (CFR), EPA states:

> *This rulemaking is necessary because without it the PSD and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the CCA, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to GHG sources, starting with the largest GHG emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources, but excludes certain smaller sources from PSD and Title V permitting for GHG emissions until at least April 30, 2016.*

EPA estimates that facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters: power plants, refineries, and cement production facilities.

Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 sought to ensure that all vehicles sold in the U.S. would meet certain fuel economy goals. Through this Act, Congress established the first fuel economy standards for on-road motor vehicles in the U.S. Pursuant to the Act, the National Highway Traffic and Safety Administration (NHTSA), which is part of the U.S. Department of Transportation (DOT), is responsible for establishing additional vehicle standards and for revising existing standards.

Since 1990, the fuel economy standard for new passenger cars has been 27.5 miles per gallon (mpg); since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 mpg. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not currently subject to fuel economy standards. Compliance with federal fuel economy standards is determined on the basis of each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the U.S. The Corporate Average Fuel Economy (CAFE) program, which is administered by the EPA, was created to determine vehicle manufacturers' compliance with the fuel economy standards. The EPA calculates a CAFE value for each manufacturer based on city and highway fuel economy test results and vehicle sales. Based on the information generated under the CAFE program, the DOT is authorized to assess penalties for noncompliance. In August 2012, the EPA and the National Highway Traffic Safety Administration announced the final standard governing new-vehicle fuel economy for model years 2017 through 2025. The new standard continued the previous system of incremental increases in CAFÉ requirements, and introduced the strategy of simultaneously regulating fuel economy and GHG emissions of new vehicles (model years 2012 through 2016). Together, implementation of these standards is anticipated to cut GHG emissions by an estimated 960 MMT and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program, and simultaneously reduce GHG emissions, improve energy security, increase fuel savings, and provide clarity and predictability for manufacturers.

Energy Policy Acts of 1992 and 2005

The Energy Policy Act (EPAct) of 1992 was passed to reduce the country's dependence on foreign petroleum and improve air quality. EPAct includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. EPAct requires certain federal, state, and local government and private fleets to purchase a percentage of light duty AFVs capable of operating on alternative fuels each year. In addition, financial incentives are included in

EPAct. Federal tax deductions will be allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the Act to consider a variety of incentive programs to help promote AFVs. It was amended several times in the Energy Conservation and Reauthorization Act of 1998 and in 2005. The EPAct of 2005 was signed into law on August 8, 2005. Generally, the EPAct of 2005 provides for renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for a clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

Climate Change Action Plan of 1993

In October 1993, President Clinton announced his Climate Change Action Plan, which had a goal to return GHG emissions to 1990 levels by the year 2000. This was to be accomplished through 50 initiatives that relied on innovative voluntary partnerships between the private sector and government aimed at producing cost-effective reductions in GHG emissions.

B. STATE

Concern about the disproportionately negative impacts that global warming are expected to have on the California environment and economy has led the California State Legislature to pass several climate change related bills. These bills are aimed at controlling and reducing the emission of GHGs to slow the effects of global warming. The bills that have the potential to substantially impact or be impacted by the proposed Project are discussed in this section. In addition to the bills discussed below, the California Legislature has introduced numerous other bills that range in scope from establishing market-based compliance mechanisms to energy standards for light bulbs. Some have been enacted into law and others are pending. In addition to the legislature bills, former governors as well as the current Governor of California have issued several climate change-related executive orders. A brief discussion of the State Senate Bills (SB), Assembly Bills (AB) and Executive Orders (EO) are provided below.

Senate Bills

Senate Bill 1771 – Climate Action Registry

In September 2000, Senate Bill 1771 established the creation of the non-profit organization, the California Climate Action Registry (CCAR) and specified functions and responsibilities to develop a process to identify and qualify third-party organizations approved to provide technical assistance and advice in monitoring GHG emissions, and setting GHG emissions baselines in coordination with the California Energy Commission (CEC). The bill directs the CCAR to enable participating entities to voluntarily record their annual GHG emissions inventories. SB 1771 also directed CEC to update the state's greenhouse gas inventory from an existing 1998 report and continuing to update it every five years.

Senate Bills 1078 and 107 - Renewable Portfolio Standards Program

On September 12, 2002, then Governor Gray Davis signed SB 1078, establishing the California Renewables Portfolio Standard (RPS) Program, and requiring California to generate 20 percent of its electricity from renewable energy by December 31, 2017 for the purposes of increasing the diversity, reliability, public health and environmental benefits of the energy mix.

On September 26, 2006, SB 107 moved the RPS due date forward to 2010 instead of 2017. SB 107 directs CPUC's Renewable Energy Resources Program to increase the amount of renewable electricity generated per year, from 17 percent to an amount that equals at least 20 percent of the total electricity sold to retail customers in California per year by December 31, 2010. In 2008, RPS target increased

under EO S-21-09 (discussed further below), which required the state's load serving entities to meet a 33 percent renewable energy target by 2020.

Senate Bill 1368 – Emissions Performance Standards

SB 1368 was approved by Governor Schwarzenegger on September 29, 2006. SB 1368 requires the California Energy Commission (CEC) and California Public Utilities Commission (CPUC) to set a global warming emissions standard for electricity used in California regardless of whether it's generated in-state or purchased from plants in other states. The new standard applies to any new long-term financial contracts for base load electricity, and applies both to investor-owned utilities and municipal utilities. The standard for baseload generation owned by, or under long-term contract to publicly owned utilities, is an emissions performance standard (EPS) jointly established by the CEC and the CPUC of 1,100 pounds of CO_2 per megawatt-hour (MWh).

Senate Bill 97 – CEQA: Greenhouse Gas Emissions

In August 2007, Governor Schwarzenegger signed into law SB 97 – CEQA: Greenhouse Gas Emissions, stating: "This bill advances a coordinated policy for reducing GHG emissions by directing the Office of Planning and Research (OPR) and the Resources Agency to develop California Environmental Quality Act (CEQA) guidelines on how state and local agencies should analyze and, when necessary, mitigate GHG emissions." Specifically, SB 97 requires the OPR to prepare, develop, and transmit to the CNRA guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, including but not limited to, effects associated with transportation or energy consumption. The CNRA certified and adopted the guidelines amendments on December 30, 2009, and transmitted the Adopted Amendments and the entire rulemaking file to the OAL on December 31, 2009. The amendments were approved by the OAL on February 16, 2010, and became effective on March 18, 2010. The new CEQA guidelines provide the lead agency with broad discretion in determining what methodology is used in assessing the impacts of GHG emissions in the context of a particular project.

The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

A new section, CEQA Guidelines Section 15064.4, was added to assist agencies in determining the significance of GHG emissions. The new section allows agencies the discretion to determine whether a quantitative or qualitative analysis is best for a particular project. However, little guidance is offered on the crucial next step in this assessment process: how to determine whether the project's estimated GHG emissions are significant or cumulatively considerable.

Also amended were CEQA Guidelines Sections 15126.4(c) and 15130(b)(1)(B) which address mitigation measures and cumulative impacts respectively. GHG mitigation measures are referenced in general terms, but no specific measures are championed. The revision to the cumulative impact discussion requirement simply directs agencies to analyze GHG emissions in an EIR when a project's incremental contribution of emissions may be cumulatively considerable. However, it does not answer the question of when emissions are cumulatively considerable. CEQA Guidelines Section 15183.5 permits programmatic GHG analysis and later project-specific tiering, as well as the preparation of Greenhouse Gas Reduction Plans. Compliance with such plans can support a determination that a project's cumulative effect is not cumulatively considerable, according to CEQA Guidelines 15183.5(b).

In addition, the amendments revised Appendix F of the CEQA Guidelines, which focuses on Energy Conservation, and also required analysis of projects' energy use and demand be included in CEQA analysis. The sample environmental checklist in Appendix G was amended to include GHG questions as issue VII.

Senate Bill 375 - Sustainable Communities and Climate Protection Act of 2008

SB 375 requires that regions within the State, which have a metropolitan planning organization, must adopt a sustainable communities strategy as part of their regional transportation plans. The strategy must be designed to achieve certain goals for the reduction of GHG emissions. The bill finds that GHG from autos and light trucks can be substantially reduced by new vehicle technology, but even so, "it will be necessary to achieve significant additional greenhouse gas reductions from changed land use patterns and improved transportation. Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 provides that new CEQA provisions be enacted to encourage developers to submit applications and local governments to make land use decisions that will help the State achieve its goals under AB 32," and that "current planning models and analytical techniques used for making transportation infrastructure decisions and for air quality planning should be able to assess the effects of policy choices, such as residential development patterns, expanded transit service and accessibility, the walkability of communities, and the use of economic incentives and disincentives."

Assembly Bills

Assembly Bill 2067 - California Strategy to Reduce Petroleum Dependence

AB 2076 (Chapter 936, Statutes of 2000) requires the CEC and the CARB to develop and submit to the Legislature a strategy to reduce petroleum dependence in California. The statute requires the strategy to include goals for reducing the rate of growth in the demand for petroleum fuels. In addition, the strategy is required to include recommendations to increase transportation energy efficiency as well as the use of non-petroleum fuels and advanced transportation technologies including alternative fuel vehicles, hybrid vehicles, and high-fuel efficiency vehicles.

The strategy, *Reducing California's Petroleum Dependence*, was adopted by the CEC and CARB in 2003. The three-fold strategy recommends that: 1) California reduce inroad gasoline and diesel fuel demand to 15 percent below 2003 demand levels by 2020 and maintain that level for the foreseeable future; 2) the Governor and Legislature work to establish national fuel economy standards that double the fuel efficiency of new cars, light trucks, and sport utility vehicles (SUVs); and, 3) the use of non-petroleum fuels increase to 20 percent of on-road fuel consumption by 2020 and 30 percent by 2030.

Assembly Bill 1493 – Vehicle Emissions

AB 1493 (Pavley) enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Regulations adopted by CARB will apply to 2009 and later model year vehicles. CARB estimates that the regulation will reduce climate change emissions from light duty passenger vehicle fleet by an estimated 22 percent in 2012 and 30 percent in 2016. The federal Corporate Average Fuel Economy (CAFE) standard determines the fuel efficiency of certain vehicle classes in the United States. In 2007, as part of the Energy and Security Act of 2007, CAFE standards were increased for new light-duty vehicles to 35 miles per gallon by 2020.

Assembly Bill 32 – Global Warming Solution Act

The California Global Warming Solutions Act of 2006, widely known as AB 32, requires the CARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB is directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. California needs to reduce GHG emissions by approximately 28.3 percent below the business-as-usual (BAU) predictions to achieve this goal.

Climate Change Scoping Plan

In 2008, CARB adopted its *Climate Change Scoping Plan* (Scoping Plan) which functions as a roadmap of CARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. The Scoping Plan identifies GHG emissions reductions CARB recommends for each emissions sector of the state's GHG inventory. The Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards (CARB 2008):

- improved emissions standards for light-duty vehicles (estimated reductions of 31.7 $MMTCO_2e$),
- the Low-Carbon Fuel Standard (15.0 $MMTCO_2e$),
- energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 $MMTCO_2e$), and
- a renewable portfolio standard for electricity production (21.3 $MMTCO_2e$).

CARB approved the 1990 GHG emissions level of 427 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) on December 6, 2007. Therefore, emissions generated in California in 2020 are required to be equal to or less than 427 $MMTCO_2e$. The Scoping plan is required to be updated every five years. Currently, CARB's first update is available for public review as a discussion draft, and undergoing CEQA review. According to the *Climate Change Scoping Plan First Update - Discussion Draft for Public Review and Comment*, updated emissions in 2020 in a "business as usual" scenario are estimated to be 507 $MMTCO_2e$ (CARB 2013c). This projection incorporates two reduction measures [Pavley I and the Renewables Portfolio Standard (12% - 20%)] that have been implemented since the original BAU estimate was prepared as part of the 2008 Scoping Plan. The discussion draft also provides updated estimates that an additional reduction of 80 $MMTCO_2e$ are necessary to reduce statewide emissions to the AB 32 Target of 427 $MMTCO_2e$ by 2020 (CARB 2013c).

The California Environmental Protection Agency's *2013 Greenhouse Gas Reduction Report Card* (CalEPA 2013) reported that in 2011, the date for which the most current data are available, California had achieved a reduction of 12.2 $MMTCO_2e$ from implementation of various measures carried out by State agencies and that a reduction of 146.4 $MMTCO_2e$ is expected by 2020.

Executive Orders

Executive Order S-3-05 – GHG Reductions by Year 2020

EO S-3-05, signed by Governor Schwarzenegger on June 1, 2005, established the state's first greenhouse gas emission reduction targets in 2005. Specifically, EO S-3-05 calls for a reduction in GHG emissions to year 1990 levels by the year 2020, and for an 80 percent reduction in GHG emissions by the year 2050. EO S-3-05 also created the CalEPA Climate Action Team (CAT), and calls for the CAT to prepare biennial science reports on the potential impact of continued global warming on certain sectors of the California economy. The most recent of these reports, "Climate Action Team Report to Governor Schwarzenegger and the California Legislature," was published in December 2010. According to the report, substantial temperature increases would result in a variety of impacts to the people, economy, and environment of California associated with a projected increase in extreme conditions. The severity of the impacts would depend upon actual future emissions of GHGs and associated warming. Under the report's emissions scenarios, the impacts of global warming in California are anticipated to include, but are not limited to, public health, biology, rising sea levels, hydrology and water quality, and water supply.

Executive Order S-01-07 – Low Carbon Fuel Standard

EO S-01-07 was enacted by then Governor Schwarzenegger on January 18, 2007. The order mandates the following: 1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and 2) that a Low Carbon Fuel Standard ("LCFS") for transportation fuels be established for California. It is assumed that the effects of the LCFS would be a 10 percent reduction in GHG emissions from fuel use by 2020.

Executive Order S-13-08 – Climate Adaptation Strategy

EO S-13-08 was enacted by then Governor Schwarzenegger on November 14, 2008. EO S-13-08 indicates that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the order, the 2009 California Climate Adaptation Strategy (CNRA 2009) was adopted, which is the"…first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order S-21-09 – Renewable Energy Target

EO S-21-09 was enacted by then Governor Schwarzenegger on September 15, 2009. EO S-21-09 requires that the CARB, under its AB 32 authority, adopt a regulation by July 31, 2010 that sets a 33 percent renewable energy target as established in EO S-14-08 by 2020. Under EO S-21-09, the CARB was required to work with the CPUC and CEC to encourage the creation and use of renewable energy sources, and to regulate all California utilities. The CARB was also required to consult with the Independent System Operator (ISO) and other load balancing authorities on the impacts on reliability, renewable integration requirements, and interactions with wholesale power markets in carrying out the provisions of the EO. The order requires the CARB to establish highest priority for those resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health. CARB approved the Renewable Portfolio Standard on September 23, 2010 by Resolution 10-23 (see also SB 1078 and SB 107, above).

California Code of Regulations Title 24

Although not originally intended to reduce GHG, California Code of Regulations (CCR) Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Energy efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in greenhouse gas emissions. Therefore, increased energy efficiency results in decreased GHGs. CARB's greenhouse gas inventory is based on 2006 Title 24 standards.

California Air Resources Board: Interim Significance Thresholds

In October 2008, the CARB released interim guidance on significance thresholds for industrial, commercial, and residential projects. The draft proposal for residential and commercial projects states that a project would not be significant if it complies with a previously approved plan that addresses GHG emissions, or meets an energy use performance standard defined as CEC's Tier II Energy Efficiency goal (specified as 35 percent above Title 24 requirements) along with "as yet to be defined" performance standards for water, waste, and transportation or is below an "as yet to be developed" threshold for

GHG emissions in tons per year. As such, the CARB did not establish a threshold of significance. As of January 22, 2009, the CARB has halted all work efforts on the draft *GHG Threshold of Significance Under CEQA*. As such, local jurisdictions and air districts currently establish guidance on thresholds for their district, pending statewide direction.

C. LOCAL

Imperial County Air Pollution Control District (ICAPCD)

The CARB's Scoping Plan states that local governments are "essential partners" in the effort to reduce GHG emissions (ARB 2008). The Scoping Plan also acknowledges that local governments have broad influence and, in some cases, exclusive jurisdiction over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Many of the proposed measures to reduce GHG emissions rely on local government actions. Imperial County has not established formal quantitative or qualitative thresholds through a public rulemaking process, but CEQA permits the lead agency to establish a project-specific threshold of significance if backed by substantial evidence, until such time as a formal threshold is approved.

ICAPCD Rule 903

ICAPCD Rule 903 applies to any stationary source that would have the potential to emit air contaminants equal to or in excess of the threshold for a major source of regulated air pollutants. In 2011, ICAPCD amended Rule 903 to add GHGs to the list of regulated pollutants. As part of the revised rule, stationary sources that do not exceed the *de minimis* emissions level of 20,000 tons CO_2e per year in a 12-month period would not need to meet recordkeeping and reporting requirements. The ICAPCD has no regulations or additional guidelines relative to GHG emissions for residential, commercial, or industrial projects (AECOM 2104b, p. 16).

Imperial County General Plan

The Imperial County General Plan does not contain any goals, objectives, policies or programs directly pertaining to GCC or GHG.

4.5.2 ENVIRONMENTAL SETTING

A. GLOBAL CLIMATE CHANGE

Global climate change (GCC) is a change in the average weather of the earth that is measured by temperature, wind patterns, precipitation, and storms over a long period of time. The baseline, against which these changes are measured, originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed an unprecedented acceleration in the rate of warming during the past 150 years. GCC is a documented effect. Although the degree to which the change is caused by anthropogenic (human activity) sources is still under study, the increase in warming has coincided with the global industrial revolution which has seen the widespread reduction of forests to accommodate urban centers, agriculture, and the use of fossil fuels (primarily the burning of coal, oil, and natural gas for energy). The

majority of scientists agree that anthropogenic sources are a main, if not primary, contributor to the GCC warming.

The effects of increasing global temperature are far-reaching and extremely difficult to quantify. The scientific community continues to study the effects of GCC. In general, increases in the ambient global temperature as a result of increased GHGs is anticipated to result in rising sea levels which could threaten coastal areas through accelerated coastal erosion; threats to levees and inland water systems; and disruption to coastal wetlands and habitat.

B. CLIMATE CHANGE IN CALIFORNIA

The latest release the "Inventory of California Greenhouse Gas Emissions and Sinks: 2000 to 2011" was released by CARB on August 29 2013. **Table 4.5-1** provides a summary of the Inventory by sector years 2000, 2005, 2010 and 2011. The Inventory is divided into nine broad sectors of economic activity: agriculture, commercial, electricity generation, forestry, high global warming potential (GWP) emitters, industrial, recycling and waste, residential, and transportation. Emissions are quantified in $MMTCO_2E$.

TABLE 4.5-1
CALIFORNIA GHG EMISSIONS BY SECTOR IN 2001, 2005, 2010, AND 2011

Sector	2001 Emissions in $MMTCO_2E$ (% total)[1]	2005 Emissions in $MMTCO_2E$ (% total)[1]	2010 Emissions in $MMTCO_2E$ (% total)[1]	2011 Emissions in $MMTCO_2E$ (% total)[1]
Agriculture	29.23 (6.0%)	32.81 (6.8%)	31.68 (7.0%)	32.24 (7.2%)
Commercial[2]	43.25 (8.9%)	13.94 (2.9%)	14.83 (3.3%)	14.87 (3.3%)
Electricity Generation	122.01 (25.0%)	107.86 (22.4%)	90.09 (20.0%)	86.57 (19.3%)
High GWP[3]	7.12 (1.5%)	9.25 (1.9%)	14.15 (3.1%)	15.17 (3.4%)
Industrial	93.85 (19.3%)	94.23 (19.5%)	91.00 (20.2%)	93.24 (20.8%)
Recycling and Waste	6.26 (1.3)	6.47 (1.3%)	6.94 (1.5%)	7.00 (1.6%)
Residential[2]	*See notes[2]*	28.18 (5.8%)	29.38 (6.5%)	29.85 (6.7%)
Transportation	176.65 (36.25 %)	188.94 (39.2%)	170.61 (37.9%)	168.42 (37.6%)
Total	**487.36**	**482.09**	**449.59**	**448.11**

Source: CARB 2013d.

[1] Percentages may not total 100 due to rounding.

[2] 2001 commercial emissions included residential emissions.

[3] GWP = High Global Warming Potential gases, which consist primarily of ozone depleting substances (ODCs) – primarily HFCs and PFCs – that are used in a variety of applications, including refrigeration and air conditioning equipment, solvent cleaning, foam production, sterilization, fire extinguishing, and aerosols.

The inventory indicates that California's gross emissions of GHG decreased by six percent from 478.36 $MMTCO_2e$ in 2001 to 448.11 $MMTCO_2e$ in 2011, with a maximum 489.2 $MMTCO_2e$ in 2004 (2004 not shown in table). During the same period, California's population grew by nine percent from 34.5 to 37.6 million people. As a result, California's per capita GHG emissions decreased from 2001 through 2011 from 13.9 to 11.9 tons of CO_2e per person. In 2011, emissions continued to decrease for the transportation and electric power sectors. Emissions from all other sectors remained relatively flat or increased slightly from 2010 (CARB 2013d).

Comparatively, total U.S. GHG emissions as of 2011, the latest information available, were 6,702.3 $MMTCO_2e$ (EPA 2013). Total U.S. GHG emissions increased by 8.4 percent from 1990 to 2011, and emissions decreased from 2010 to 2011 by 1.6 percent (108.0 $MMTCO_2e$). The decrease from 2010 to 2011 was due to a decrease in the carbon intensity of fuels consumed to generate electricity due to a

decrease in coal consumption, with increased natural gas consumption and a significant increase in hydropower used. Additionally, relatively mild winter conditions, especially in the South Atlantic Region of the U.S. where electricity is an important heating fuel, resulted in an overall decrease in electricity demand in most sectors. Since 1990, U.S. emissions have increased at an average annual rate of 0.4 percent (EPA 2013).

A summary and overview of the impacts of GCC on various sectors of California's economy and natural resources, based on the CAT's white paper "Scenarios of Climate Change in California: An Overview" (CAT 2006) is provided below.

Public Health

Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation are projected to increase from 25 percent to 35 percent under the lower warming range; under the medium warming range, ozone formation is expected to increase from 75 percent to 85 percent. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires which emit fine particulate matter that can travel long distances depending on wind conditions. Large wildfires could become up to 55 percent more frequent if GHG emissions are not significantly reduced (CAT 2006).

In addition, under the higher warming scenario, there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and 95°F in Sacramento by 2100. This is a large increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures will increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

Water Resources

A vast network of man-made reservoirs and aqueducts capture and transport water throughout the state from northern California and the Colorado River. The current distribution system relies on Sierra Nevada snow pack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snow pack, increasing the risk of summer water shortages (CAT 2006).

The state's water supplies are also at risk from rising sea levels. An influx of saltwater would degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta, a major state fresh water supply. Global warming is also projected to seriously affect agricultural areas, with California farmers projected to lose as much as 25 percent of the water supply they need; decrease the potential for hydropower production within the state (although the effects on hydropower are uncertain); and seriously harm winter tourism. Under the lower warming range, the snow dependent winter recreational season at lower elevations could be reduced by as much as one month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing and snowboarding and other snow dependent recreational activities (CAT 2006).

If GHG emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snow pack by as much as 70 percent to 90 percent. Under the lower warming scenario, snow pack losses are expected to be only half as large as those expected if temperatures were to rise to the higher warming range. How much snow pack will be

lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snow pack would pose challenges to water managers, hamper hydropower generation, and nearly eliminate all skiing and other snow-related recreational activities (CAT 2006).

Agriculture

Increased GHG emissions are expected to cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. Although higher carbon dioxide levels can stimulate plant production and increase plant water-use efficiency, California's farmers will face greater water demand for crops and a less reliable water supply as temperatures rise (CAT 2006).

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than optimal development for many crops, so rising temperatures are likely to worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts, and milk (CAT 2006).

Crop growth and development will be affected, as will the intensity and frequency of pest and disease outbreaks. Rising temperatures will likely aggravate ozone pollution, which makes plants more susceptible to disease and pests and interferes with plant growth (CAT 2006).

In addition, continued global warming will likely shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Should range contractions occur, it is likely that new or different weed species will fill the emerging gaps. Continued global warming is also likely to alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates (CAT 2006).

Forests and Landscapes

Global warming is expected to alter the distribution and character of natural vegetation thereby resulting in a possible increased risk of large of wildfires. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, because wildfire risk is determined by a combination of factors, including temperature, precipitation, winds, and landscape and vegetation conditions, future risks will not be uniform throughout the state. For example, if precipitation increases as temperatures rise, wildfires in southern California are expected to increase by approximately 30 percent toward the end of the century. In contrast, precipitation decreases could increase wildfires in northern California by up to 90 percent (CAT 2006).

Moreover, continued global warming will alter natural ecosystems and biological diversity within the state. For example, alpine and sub-alpine ecosystems are expected to decline by as much as 60 percent to 80 percent by the end of the century as a result of increasing temperatures. The productivity of the state's forests is also expected to decrease as a result of global warming (CAT 2006).

Rising Sea Levels

Rising sea levels, more intense coastal storms, and warmer water temperatures will increasingly threaten the state's coastal regions. Under the higher warming scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate coastal areas with saltwater, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats (CAT 2006).

Energy Resources

The Project proposes development of a 135 MW PV solar complex. California produces almost 70 percent of its electricity consumption from power plants located within the state and imports the remaining 30 percent. Energy production effects the GHG intensity of electricity generation (i.e., the quantity of CO_2e emitted per MWh produced). The GHG intensity of California electricity peaked in 2001, a year marked by drought and electricity market manipulation, and reached a low point in 2011, a particularly wet year. The GHG intensity of electricity imports declined to the lowest point in a decade in 2010 and increased slightly in 2011 (CARB 2013d).

CARB's GHG emission inventory divides the electric power sector into two broad categories: 1) emissions from in-state power generation; and, 2) emissions from imported electricity. Total GHG emissions from electric power generation varied over the eleven years between 2001 and 2011 from a high 122.0 MT of CO_2e in 2001 to a low of 86.6 MT of CO_2e in 2011, an overall decrease of about 29 percent. During that same period, electricity consumption grew from 250.4 terawatt hours (TWh) in 2001 to 287.8 TWh in 2008, followed by a steady decline to 272.6 TWh in 2011 (CARB 2013d).

The Imperial Irrigation District (IID) is the electric utility provider to Imperial County. IID uses a comprehensive energy strategy that relies on expansion of customer energy efficiency and demand-side management programs to meet its customers' future power needs in ways that are consistent with the California's Energy Action Plan. The strategy also includes securing additional renewable power resources before seeking to meet customer energy needs through efficient traditional generation sources.

A discussion of energy impacts are analyzed as part of Chapter 7.0, Other CEQA Required Considerations, of this EIR.

C. SOLAR FARM COMPLEX

The discussion provided below summarizes the primary Project components and provides an overview of GHGs currently generated on the solar farm complex site and the carbon sequestration potential of the solar farm complex site. The proposed Project would consist of the construction, operation and reclamation of up to five individual solar energy projects (solar projects 1 thru 5). Each of the five projects would be built on different lots. Solar projects 1-3 would each be built on lots of approximately 185 acres (Lot 1, Lot 2 and Lot 3, respectively). Solar projects 4 and 5 would each be built on lots slightly larger than 300 acres (Lot 4 totals approximately 319 acres, and Lot 5 totals approximately 307 acres). Other Project components include an O&M building, parking area, water well and sanitary waste septic system and leach field within each of the five solar energy project lots; extension of the existing 12.5 kV electrical distribution system within the Solar farm complex site to each new building; a new access road off of SR 78 and internal access roads across portions of the Solar farm complex site to each lot; a new IID electrical switch station; private electrical substations for each of the five solar energy projects; gen-tie lines from each of the five solar energy projects to the electrical substations and switch station; approximately three miles of new IID 92 kV transmission line for interconnection of the new IID switch station; modifications to the existing IID Anza Substation; and expansion of the Anza Substation per IID requirements. Approximately 2.25 miles of the new IID 92kV transmission line would be constructed above an existing IID 12.5 kV distribution line (i.e. overbuilt).

The parcels that comprise the solar farm complex site were previously in agricultural production. However, as previously noted, the solar farm complex site has not been farmed in recent years and is reverting to open desert. At the end of the useful life of the Project, the solar farm complex would be removed and the solar farm complex site would be reclaimed to approximate the existing idle farmland.

Site preparation and construction of shared internal roadways, facilities, transmission lines, and Anza Substation expansion would occur over a total of four months. Construction of each of the solar energy projects is expected to be completed in approximately four to five months (for each of the three smaller lots) and seven to eight months (for each of the two larger lots). Construction of each of the projects is expected to consist of the following eight activities: complex internal access road construction; demolition; site preparation; grading; solar panel installation; building erection; electrical substation construction; and transmission line construction. Each of the five projects would be constructed independently, and construction of one solar project is not expected to overlap the construction of another solar project. However, construction of the first solar project would overlap construction of common infrastructure within the solar farm complex site (construction of a new access road off of SR 78, construction of an IID 92 kV transmission line; construction of an IID switching station; and modifications to the Anza Substation).

Following construction, the Project would operate 365 days per year and generate power during daylight hours. The operational life of each of the five solar field projects would be 20 to 25 years. The Project would generate approximately 135 MWs of net electrical output per year. The proposed Project is described in detail in Chapter 2.0, Project Description.

The Project site primarily consists of idle agricultural fields that are separated by dirt access roads or rows of mature tamarisk trees that serve as a windbreak. Existing uses onsite include several out buildings, an above-ground diesel fuel storage tank within a concrete block secondary containment structure, a covered material storage area, a truck weigh scale and shed, two unlined basins, and seven groundwater wells. Two residences that are occasionally occupied are on the north side of Lot 5. In addition, two vacant farm houses are located on the west side of Lot 5. These would be demolished to accommodate development of the solar energy project on Lot 5. As such, there are very limited “point source” quantities of GHGs currently being produced on the Project site.

4.5.3 IMPACTS AND MITIGATION MEASURES

A. STANDARDS OF SIGNIFICANCE

In 2007, SB 97 established a requirement for the Resources Agency to certify and adopt guidelines prepared and developed by the Office of Planning and Research for the mitigation of GHG emissions or the effects of GHG emissions. The modifications address how to determine the significance of impacts from GHG emissions. It calls for Lead Agencies to use "careful judgment" based on a "good faith effort" based "to the extent possible" on scientific and factual data to "describe, calculate, or estimate" the amount of GHGs from a project. It allows Lead Agencies to decide whether to require a quantitative or qualitative analysis and how to assess significance. It suggests factors that should be considered when assessing those impacts. However, the adopted Amendments will not become effective until after the OAL completes its review of the Amendments and transmits them to the Secretary of State for inclusion in the California Code of Regulations (CCR).

GHGs do not have human health effects like criteria pollutants. Rather, it is the increased accumulation of GHGs in the atmosphere that may result in GCC. Due to the complexity of conditions and interactions affecting GCC, it is not possible to predict the specific impact, if any, attributable to GHG emissions associated with a single project. Furthermore, the proposed project’s GHG emissions would be small relative to total global or even statewide GHG emissions. Thus, the significance of potential impacts from GHG emissions related to the proposed Project has been analyzed for long-term operations on a cumulative basis, as discussed further in the following subsections.

Pursuant to SB 97, the CEQA Guidelines were amended to address GHG emissions and these changes became effective March 18, 2010. For this analysis and pursuant to the CEQA, the Project's GHG emissions and its incremental contribution to GCC would be considered significant if it would:

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

The ICAPCD has not established quantitative significance thresholds for the evaluation of GHG emissions for CEQA analysis. Instead, each project is evaluated on a case-by-case basis using the most up-to-date calculation and analysis methods. Therefore, to establish additional context in which to consider the order of magnitude of the Project's construction-related and operational GHG emissions, this analysis considers the following guideline from the nearby South Coast Air Quality Management District (SCAQMD) on the levels of GHG emissions that would constitute a cumulatively considerable incremental contribution to GCC.

- The SCAQMD has adopted a significance threshold for GHG emissions of 10,000 MT CO_2e per year where SCAQMD is the lead agency for an industrial project.

The significance threshold presented above is for informational purposes only in order to serve as an example of the type of thresholds being established and utilized in nearby jurisdictions/AQMDs. In the absence of ICAPCD thresholds, the intention is to put Project-generated GHG emissions into the appropriate State-wide context in order to evaluate whether the GHG emissions contribution from the Project to GCC would reach the level of a considerable incremental contribution to a significant cumulative impact.

Many California air districts, including SCAQMD, also recommend that construction emissions associated with a project be amortized over the life of the project (typically 30 years) and added to the operational emissions. Therefore, modeled construction-related GHG emissions associated with the Project are discussed first, then operational GHG emissions are totaled and the amortized construction emissions are added to the operational emissions.

B. METHODOLOGY

Greenhouse Gas Emissions

Due to the global nature of climate change and GHG emissions and their potential effects, GHG emissions generated by an individual project are evaluated on a cumulative basis. This section also analyzes potential air quality impacts associated with construction and operation of the proposed Project. Information contained in this section is summarized from the "Air Pollutant Emission Assessment, Seville Solar Farm Complex Construction, Imperial County, California" (EMA 2013c), the "Air Pollutant Emission Assessment, Seville Solar Farm Complex Operations, Imperial County, California" (EMA 2013d), and the memo "Air Pollutant Emission Assessment, Anza Substation Expansion, Imperial County, California" (EMA 2014b), prepared by Environmental Management Associates. The analysis in these technical assessments was based on the Project Description provided to by the Applicant, which is also reflected in Chapter 2.0, Project Description, of this EIR. The air quality/GHG technical assessments are provided on the attached CD of Technical Appendices as **Appendix C** of this EIR.

Emissions of GHGs for both short-term construction and long-term operational activities of the Project were estimated using the California Emission Estimator Model (CalEEMod) (version 2011.1.1), which can be used to estimate emissions of three GHGs [CO_2, CH_4, and N_2O] for various land uses, area sources,

construction and operational activities, and vehicle travel. CalEEMod emission factors were also used for estimating operational GHG emissions associated with annual electrical energy use. In order to best utilize the capabilities of CalEEMod, EMA calculated emissions from the Project activities in multiple CalEEMod models.

As CalEEMod does not have a land use category for a solar photovoltaic farm or substation, the "user defined industrial" land use category was selected as a surrogate. Where applicable, CalEEMod defaults were retained as the model inputs. However, CalEEMod defaults were replaced with project-specific information where available (such as the number of worker-commute and truck traffic trips and the mix of construction equipment expected to be used).

CalEEMod (Version 2011.1.1) was used to estimate annual GHG emissions from the Project's site preparation and grading, and off-road construction equipment and activities, as well as emissions from on-road worker and vendor vehicle trips to and from the Project area during construction. During operations, GHG emissions were estimated based on the projected electric power and water consumption during operations, as well as projected waste generation, off-road equipment use and on-road worker and vendor vehicle trips to and from the Project area.

To estimate the annual Project construction CO_2e, the estimated CO_2, CH_4, and N_2O emissions were multiplied by their respective global warming potential (GWP) values and combined to derive the total amount of CO_2e expected to result from construction and operation of the proposed solar projects.

C. PROJECT/CUMULATIVE IMPACTS AND MITIGATION MEASURES

Generation of Greenhouse Gas Emissions

Impact 4.5.1 The proposed Project would generate greenhouse gas emissions during construction and reclamation activities, primarily related to emissions from construction equipment. Operational emissions would occur to a lesser degree in relation to the use of maintenance equipment. This impact is considered **less than significant**.

Construction

During construction, the Project would result in daily activities including worker trips, grading, demolition, construction, and paving. The air pollutant emission assessment (EMA 2013c) and Air Pollutant Emission Assessment, Anza Substation Expansion, Imperial County, California" (EMA 2014) prepared for the Project anticipate annual GHG emissions associated with Project construction as shown in **Table 4.5-2** (EMA 2013c; EMA 2014b).

TABLE 4.5-2
SEVILLE SOLAR FARM COMPLEX - TOTAL CONSTRUCTION CO_2 EMISSIONS

Project Construction Activity 2014	Emission Rate (Metric Tons)*
	CO_2e
Common Infrastructure and Anza Substation	
New Access Road	47.69
IID Switch Station	95.97
IID Transmission Lines	36.21
Anza Substation Expansion	86.56
Common Infrastructure Subtotal	***266.43***
Seville Solar Farm – 3 Small Project Construction CO_2 Emissions	

TABLE 4.5-2
SEVILLE SOLAR FARM COMPLEX - TOTAL CONSTRUCTION CO_2 EMISSIONS

Project Construction Activity 2014	Emission Rate (Metric Tons)*
	CO_2e
Internal Roads	20.37
Demolition	5.51
Site Preparation	7.96
Grading	198.29
Solar Panel Installation	313.85
Building Erection	117.10
Substation	98.85
Gen-tie Transmission Line	34.17
Small Project SubTotal (x3 Projects)	***796.10 x3 = 2,388.30***
Seville Solar Farm - Large Project Construction CO_2 Emissions	
Internal Roads	20.37
Demolition	5.51
Site Preparation	7.96
Grading	268.22
Solar Panel Installation	579.41
Building Erection	117.10
Substation	98.85
Gen-tie Transmission Line	22.49
Large Project SubTotal (x2 Projects)	***1,119.91 x 2 = 2,239.82***
Total Construction Activities	**4,894.55**

*Source: EMA 2013c; EMA 2014b. *Mitigated and unmitigated emissions are the same.*

Therefore, Project construction activities would result in combined GHG emissions of 4,894.55 $MTCO_2e$ in 2014. However, construction activities are temporary in nature, and GHG emissions are addressed at the cumulative level over the lifespan of the Project. Cumulative construction-phase emissions are amortized over the anticipated 25-year life of the Project under Impact 4.5.2, below.

Operation

Once operational, there would be no direct emissions associated with the operation of the solar modules and the transmission lines. In the long-term, the Project would avoid CO_2 emissions that would otherwise be generated by fossil-fuel fired power plants to produce the electricity. However, the Project would result in small amount of emissions associated with daily worker trips and periodic maintenance activities.

Operations emissions associated with daily worker trips and periodic maintenance activities were modeled in two groups – the three smaller solar project sites that would have similar operations and acreage, and the two larger projects that would have similar operations and acreage. The shared IID switch yard, Project substations and Project transmission lines facilities would not have any appreciable CO_2e emissions during the operational phase. Shared common access roads are accounted for in the Project CO_2e operational emissions for the five solar project sites (EMA 2013d).

TABLE 4.5-3
SEVILLE SOLAR COMPLEX - ANNUAL OPERATIONS CO_2E EMISSIONS

Project Operational Activity 2014	Emission Rate (Metric Tons/year CO_2e)*
Total - 3 Small Projects	485.92
Total - 2 Large Projects	387.07
Total Annual Operations	**872.99**

*Source: EMA 2013c. *Mitigated and unmitigated emissions are the same.*

As shown in **Table 4.5-3**, total Project operations would result in GHG emissions of 872.99 MT/yr CO_2e GHG emissions over the Project's 25-year operational lifespan (EMA 2013d).

Amortizing the construction-phase emissions over the Project's maximum 25 year operational lifespan would result in the addition of 195.78 MT/yr CO_2e (4,894.55 MT CO_2e divided by 25 years) to the Project's total GHG emissions. Therefore, Project construction plus operations would result in a total of 1,068.77 MT/yr CO_2e GHG emissions over the Project's 25-year operational lifespan (EMA 2013c, EMA 2013d, EMA 2014b).

The total construction-related and operational CO_2e emissions associated with the Project would be less than the following adopted or proposed GHG level/threshold (discussed above under Thresholds of Significance):

- SCAQMD's significance threshold for GHG emissions of 10,000 MT CO_2e per year where SCAQMD is the lead agency for an industrial project.

Therefore, the Project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, and a **less than significant** impact would occur. The Project's contribution to GHG emissions would be **less than cumulatively considerable**.

Reclamation

Reclamation activities would increase GHG emissions as a result of exhaust from diesel equipment. The exhaust generated would be temporary in nature and are anticipated to be similar to levels generated during construction (Carey 2014). However, it is anticipated that regulatory compliance similar to or more stringent than those currently required would be required at the time of reclamation. Likewise, BACTs are also anticipated to be more stringent, and cleaner burning equipment is anticipated to be available at the time of Project reclamation (i.e. 20 to 25 years in the future). In addition, all other cumulative projects with GHG emissions would be required to comply with applicable regulations and BACTs to reduce their individual construction GHG emissions. Because the proposed Project and other cumulative projects would reduce emissions on a project-by-project basis, emissions resulting in a violation of an air quality standard would be reduced to **less than cumulatively considerable** during Project reclamation.

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.

Conflict with an Applicable Plan, Policy, or Regulation Adopted to Reduce Greenhouse Gas Emissions

Impact 4.5.2 The proposed Project would not conflict with an applicable plan, policy, or regulation adopted to reduce GHG emissions. **No impact** would occur.

Construction, Operation and Decommissioning

As discussed in the Regulatory Framework, there are multiple state-level programs and plans in place to reduce GHG levels in California. ICAPCD has also adopted rules to regulate GHG emissions for existing and new stationary sources. Project compliance with State and local GHG-related programs that are applicable to the Project include the following:

California Executive Orders S-3-05 and Assembly Bill 32

The proposed Project would assist in the reduction of California's GHG emissions consistent with the goals of Executive Order S-3-05 and Assembly Bill 32. As discussed above, the Project will avoid CO_2 emissions that would otherwise be generated by fossil-fuel fired power plants to produce the electricity.

Climate Change Scoping Plan (AB 32)

The Project proposes a renewable energy facility that would replace the need for new conventional energy-production facilities with higher GHG emissions. Therefore, over the long-term, the proposed Project would result in a net reduction in GHGs and assist the state-wide effort in meeting the RPS for energy production.

Emissions Performance Standard (SB 1368)

The standard for baseload generation owned by, or under long-term contract to publicly owned utilities, is an emissions performance standard (EPS) of 1,100 pounds of CO_2 MWh. At buildout, the Project is anticipated to produce 324,000 MWh of power annually, and 873 MT/yr CO_2e. The Project's EPS would be 5.94 lbs of CO_2e per MWh, which is well below the threshold of 1,100 pounds of CO_2 per MWh as identified by the EPS. Therefore, the Project would comply with the EPS.

California Renewables Portfolio Standard (2002 SB 1078; 2006 SB 107, 2011 SB 2; EO S-14-08; and EO S-21-09)

At buildout, the proposed Project would provide a new source of 135 MW of renewable energy and assist the State in meeting the 33 percent renewable energy requirement by 2030.

Imperial County Air Pollution Control District Rule 903

Project construction plus operations would result in a total of 1,068.77 MT/yr CO_2e GHG emissions over the Project's 25-year operational lifespan (EMA 2013c, EMA 2013d, EMA 2014b). This is significantly below the ICAPCD Rule 903 screening threshold of 20,000 MT/yr CO_2e GHG emissions.

As described above, the proposed Project is consistent with applicable local and State plans, policies, and regulations adopted to reduce GHG levels. Therefore, there would be **no impact**.

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.

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