

3.1.3 Greenhouse Gas Emissions

This section discusses potential impacts to greenhouse gases (GHG) resulting from implementation of the Jacumba Solar Energy Project (Proposed Project). The analysis is based on the review of existing resources, technical data, and applicable laws, regulations, and guidelines, as well as the following technical reports prepared for the Proposed Project:

- *Air Quality and Greenhouse Gas Technical Report for the Jacumba Solar Energy Project* (Appendix 3.1.1-1)

Comments received in response to the Notice of Preparation (NOP) included concerns regarding trucking activities, including water deliveries, during construction and that carbon release from vegetation disturbance be evaluated as well as the increase in GHG from electrical infrastructure. These concerns are considered in the preparation of this section where applicable. A copy of the NOP and comment letters received in response to the NOP is included in Appendix 1-1 of this EIR.

3.1.3.1 Existing Conditions

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

3.1.3.1.1 The Greenhouse Effect and GHGs

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

Gases that trap heat in the atmosphere are often called GHGs. The greenhouse effect traps heat in the troposphere through a threefold process as follows: Short-wave radiation emitted by the Sun is absorbed by the Earth; the Earth emits a portion of this energy in the form of long-wave radiation; and GHGs in the upper atmosphere absorb this long-wave radiation and emit it into space and toward the Earth. This “trapping” of the long-wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect. Principal GHGs include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone (O₃), and water vapor (H₂O). Some GHGs, such as CO₂, CH₄, and N₂O, occur naturally and are emitted to the atmosphere through natural processes and human activities. Of these gases, CO₂ and CH₄ are emitted in the greatest quantities from human activities. Emissions of CO₂ are largely byproducts of fossil fuel combustion, whereas CH₄ results mostly from off-gassing associated with agricultural practices and landfills. Man-made GHGs, which have a much greater heat-absorption potential than CO₂, include fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), and nitrogen trifluoride (NF₃), which are associated with certain industrial products and processes (CAT 2006).

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

The effect each GHG has on climate change is measured as a combination of the mass of its emissions and the potential of a gas or aerosol to trap heat in the atmosphere, known as its global warming potential (GWP). GWP varies between GHGs; for example, the GWP of CH₄ is 21, and the GWP of N₂O is 310. Total GHG emissions are expressed as a function of how much warming would be caused by the same mass of CO₂. Thus, GHG emissions are typically measured in terms of pounds or tons of CO₂ equivalent (CO₂E).¹

3.1.3.1.2 Contributions to GHG Emissions

In 2012, the United States produced 6,525 million metric tons of CO₂E (MMT CO₂E) (EPA 2014). The primary GHG emitted by human activities in the United States was CO₂, representing approximately 82.5% of total GHG emissions. The largest source of CO₂, and of overall GHG emissions was fossil-fuel combustion, which accounted for approximately 94.2% of the CO₂ emissions.

According to the 2012 GHG inventory data compiled by the California Air Resources Board (CARB) for the California Greenhouse Gas Inventory for 2000–2012, California emitted 459 MMT CO₂E of GHGs, including emissions resulting from out-of-state electrical generation (CARB 2014a). The primary contributors to GHG emissions in California are transportation, industry, electric power production from both in-state and out-of-state sources, agriculture, and other sources, which include commercial and residential activities. These primary contributors to California's GHG emissions and their relative contributions in 2012 are presented in Table 3.1.3-1, GHG Sources in California.

3.1.3.1.3 Potential Effects of Human Activity on Climate Change

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

¹ The CO₂ equivalent for a gas is derived by multiplying the mass of the gas by the associated GWP, such that MT CO₂E = (MT of a GHG) × (GWP of the GHG). For example, the GWP for CH₄ is 21. This means that emissions of 1 MT of methane are equivalent to emissions of 21 MT of CO₂.

scale. Substantial work has been done at the international and national level to evaluate climatic impacts, but far less information is available on regional and local impacts.

The primary effect of global climate change has been a rise in average global tropospheric temperature of 0.2°C per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling using 2000 emission rates shows that further warming would occur, which would induce further changes in the global climate system during the current century. Changes to the global climate system and ecosystems and to California would include but would not be limited to:

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

3.1.3.2 Regulatory Setting

Federal Regulations

The following federal regulations pertaining to GHG emissions would apply to the Proposed Project.

Massachusetts v. EPA

On April 2, 2007, in *Massachusetts v. EPA*, the Supreme Court directed the U.S. Environmental Protection Agency (EPA) Administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA Administrator is required to follow the language of Section

202(a) of the federal Clean Air Act. On December 7, 2009, the Administrator signed a final rule with two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

- The Administrator found that elevated concentrations of GHGs—CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆—in the atmosphere threaten the public health and welfare of current and future generations. This is referred to as the “endangerment finding.”
- The Administrator further found the combined emissions of GHGs—CO₂, CH₄, N₂O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is referred to as the “cause or contribute finding.”

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

Energy Independence and Security Act

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

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

State Regulations

The following state regulations pertaining to GHG emissions would apply to the Proposed Project.

Assembly Bill (AB) 1493

In a response to the transportation sector accounting for more than half of California’s CO₂ emissions, AB 1493 (Pavley) was enacted on July 22, 2002. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the

state board to be vehicles whose primary use is noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. On March 29, 2010, the CARB Executive Officer approved revisions to the motor vehicle GHG standards to harmonize the state program with the national program for 2012–2016 model years (EPA and NHTSA 2010). The revised regulations became effective on April 1, 2010.

Executive Order S-3-05

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

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

Subsequently, the 2010 *Climate Action Team Report to Governor Schwarzenegger and the California Legislature* (CAT 2010b) reviews past climate action milestones including voluntary reporting programs, GHG standards for passenger vehicles, the Low Carbon Fuel Standard (a statewide renewable energy standard), and the cap-and-trade program. Additionally, the 2010 report includes a cataloging of recent research and ongoing projects; mitigation and adaptation strategies identified by sector (e.g., agriculture, biodiversity, electricity, and natural gas); actions that can be taken at the regional, national, and international levels to mitigate the adverse effects of climate change; and today's outlook on future conditions.

Assembly Bill 32

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

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

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

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

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

1. Reduction of aerodynamic drag, and thereby fuel consumption, from existing trucks and trailers through retrofit technology
2. Reduction of auxiliary engine emissions of docked ships by requiring port electrification
3. Reduction of PFCs from the semiconductor industry
4. Reduction of propellants in consumer products (e.g., aerosols, tire inflators, and dust removal products)

5. Requirements that all tune-up, smog check, and oil change mechanics ensure proper tire inflation as part of overall service in order to maintain fuel efficiency
6. Restriction on the use of SF₆ from non-electricity sectors if viable alternatives are available.

As required under AB 32, on December 6, 2007, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 MMT CO₂E. In addition to the 1990 emissions inventory, CARB also adopted regulations requiring mandatory reporting of GHGs for large facilities that account for 94% of GHG emissions from industrial and commercial stationary sources in California. About 800 separate sources fall under the new reporting rules and include electricity generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and other industrial sources that emit CO₂ in excess of specified thresholds.

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

The key elements of the Scoping Plan include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
- Achieving a statewide renewables energy mix of 33%
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State of California's long term commitment to AB 32 implementation.

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

AB 2514 Energy Storage

On January 1, 2011 the enactment of Assembly bill 2514 took effect. The bill establishes a statutory definition of "energy storage system," which will mean "commercially available technology that is capable of absorbing energy, storing it for a period of time, and thereafter dispatching the energy." The system must use "mechanical, chemical or thermal processes to store energy" or store thermal energy for direct use for heating and cooling at a later time. The system may be centralized or distributed, and may be owned by a load-serving entity, a customer, or a third party. The procurement targets to be established by the CPUC will be revisited every three years and may be raised in the future without further legislative action. The bill is intended to benefit continuity from intermittent energy sources like solar and wind power. Deployment of utility-scale energy storage systems should help reduce peak demand, which in turn should decrease the need for fossil fuel-burning peaker plants.

Executive Order S-14-08

On November 17, 2008, Governor Schwarzenegger issued Executive Order S-14-08. This Executive Order focuses on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. The governor's order requires that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the order directs state agencies to take appropriate actions to facilitate reaching this target. The California Natural Resources Agency, through

collaboration with the California Energy Commission (CEC) and California Department of Fish and Wildlife (CDFW), is directed to lead this effort. Pursuant to a Memorandum of Understanding between CEC and CDFW creating the Renewable Energy Action Team, these agencies will create a “one-stop” process for permitting renewable energy power plants.

Executive Order S-21-09

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

Senate Bill 1368

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

Senate Bill X1 2

On April 12, 2011, Governor Jerry Brown signed SB X1 2 in the First Extraordinary Session, which would expand the RPS by establishing a goal of 20% of the total electricity sold to retail customers in California per year, by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses

biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts (MW) or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements with respect to its location. In addition to the retail sellers covered by SB 107, SB X1 2 adds local publicly owned electric utilities to the RPS. By January 1, 2012, the CPUC is required to establish the quantity of electricity products from eligible renewable energy resources to be procured by retail sellers in order to achieve targets of 20% by December 31, 2013; 25% by December 31, 2016; and 33% by December 31, 2020. The statute also requires that the governing boards for local publicly owned electric utilities establish the same targets, and the governing boards would be responsible for ensuring compliance with these targets. CPUC will be responsible for enforcement of the RPS for retail sellers, while CEC and CARB will enforce the requirements for local publicly owned electric utilities.

Executive Order B-30-15

On April 29, 2015, Governor Jerry Brown issued an executive order which identified an interim GHG reduction target in support of targets previously identified under S-3-05 and AB 32. Executive Order B-30-15 set an interim target goal of reducing GHG emissions to 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. To facilitate achievement of this goal, B-30-15 calls for an update to CARB's Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent. The Executive Order also calls for state agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets. Sector-specific agencies in transportation, energy, water and forestry will be required to prepare GHG reduction plans by September 2015, followed by a report on actions taken in relation to these plans in June 2016. The Executive Order does not require local agencies to take any action to meet the new interim GHG reduction threshold. It is important to note that Executive Order B-30-15 was not adopted by a public agency through a public review process that requires analysis pursuant to CEQA Guidelines section 15064.4 and that it has not been subsequently validated by a statute as an official GHG reduction target of the State of California. The Executive Order itself states it is "not intended to create, and does not, create any rights of benefits, whether substantive or procedural, enforceable at law or in equity, against the State of California, its agencies, departments, entities, officers employees, or any other person."

Local Regulations

The following local/regional regulations pertaining to GHGs would apply to the Proposed Project.

County of San Diego General Plan

The General Plan includes as an Objective A: Mitigation —reduction in greenhouse gas emissions, for which specific strategies are identified including Strategy A-2: Reduce non-renewable electrical and natural gas energy consumption and generation (energy efficiency) and Strategy A-3: Increase generation and use of renewable energy sources. The General Plan also includes policies designed to demonstrate the County’s commitment to alternative energy and GHG reduction such as policy COS-14.7, Alternative Energy Sources for Development Projects. Encourage development projects that use energy recovery, photovoltaic, and wind energy.

3.1.3.3 Analysis of Project Effects and Determination as to Significance

Methodology and Assumptions

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

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

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

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

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

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

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

The AQ/GHG technical report (Appendix 3.1.1-1) was consulted to complete this section. The analysis in this report used a methodology for estimating construction and operational emissions for the Proposed Project that has been reviewed and approved by the County.

Guidelines for the Determination of Significance

The State of California has developed guidelines to address the significance of climate change impacts based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.). Based on the CEQA Guidelines, a project would have a significant environmental impact if it would:

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

Neither the State of California nor the San Diego County Air Pollution Control District has adopted emission-based thresholds for GHG emissions under CEQA. The California Governor's Office of Public Resources Technical Advisory titled CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review, states that "public agencies are encouraged but not required to adopt thresholds of significance for environmental impacts. Even in the absence of clearly defined thresholds for GHG emissions, the law requires that such emissions from CEQA projects must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact" (OPR 2008, p. 4). Furthermore,

the advisory document indicates in the third bullet item on page 6 that “in the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a ‘significant impact,’ individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice.” Similarly, Section 15064.4(a) of the CEQA Guidelines states “The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. A lead agency should make a good-faith effort, based on the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project” (14 CCR 15064.4).

County Climate Change Analysis Criteria

The Proposed Project was analyzed using the San Diego County Recommended Approach for Addressing Climate Change, which uses a screening threshold of 900 MT CO₂E per year (San Diego County 2015). A project that exceeds the 900 MT CO₂E per year screening threshold would be required to conduct a more detailed GHG analysis. Screening thresholds are recommended based on various land use densities and project types. Projects that meet or fall below the screening thresholds are expected to result in 900 MT/year of GHG emissions or less and would not require additional analysis and the climate change impacts would be considered less than significant.

3.1.3.3.1 Generation of Construction-Related and Operational GHG Emissions

Analysis

Construction Impacts

The Proposed Project is anticipated to commence construction in May 2016 and would be completed within approximately 6 months. Details of the construction schedule, including heavy construction equipment hours of operation and duration, worker trips, and equipment mix, are included in Section 1.2 of Appendix 3.1.1-1. Proposed construction phases and associated durations, which overlap, include the following:

- Mobilization and site preparation (2 weeks)
- Clear and grub/grading/roads (6 weeks)
- Underground electrical (16 weeks)
- PV racks and solar panel installation (16 weeks)
- Substation construction (7 weeks)
- Gen-tie construction (4 weeks)

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

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

In accordance with the County's guidelines, the Proposed Project is analyzed under a 900 MT CO₂E per year screening threshold. As stated in the County guidance, construction emissions are to be amortized over the life of the project (which is estimated to be approximately 30 years for the Proposed Project) and added to the operational emissions (County of San Diego 2015). The Proposed Project is estimated to result in total construction emissions of approximately ~~937~~ 2,175 MT CO₂E. Amortized over a 30-year project life span, this would result in approximately ~~34-73~~ 73 MT CO₂E per year. Table 3.1.3-2, Estimated Construction GHG Emissions, shows the total estimated GHG construction emissions associated with the Proposed Project in the year 2016 and amortized over 30 years.

Operational Impacts

Operation of the Proposed Project would involve in-place panel washing that would occur twice a year, though for evaluation purposes to be conservative up to every 8 weeks was assumed. Washing would be performed by mobile crews who would also be available for dispatch whenever on-site repairs or other maintenance are required. Washing would be undertaken using the IPC Eagle Wash Station or similar equipment and washing vehicles.

Maintenance and repair activities for transmission facilities would include routine preventive maintenance and emergency procedures conducted to maintain system integrity, as well as vegetation clearing. Activities anticipated to occur would include pole or structure brushing, herbicide application, equipment repair and replacement, and insulator washing. Operational activities are described in more detail in Chapter 1, Project Description.

Operation of the Proposed Project would produce GHG emissions associated with inspection vehicles, washing vehicles (heavy-duty diesel water trucks), and water supply during operation and maintenance for the Project. GHG emissions from natural gas use and creation of solid waste are not associated with the Proposed Project. Electricity consumption for Project operations is anticipated to be minimal and would use that stored by the battery storage.

Motor Vehicles

The Proposed Project would impact GHG emissions through the vehicular traffic generated by operations and maintenance inspection and washing vehicles. As summarized in Table 3.1.3-3, Estimated Operational GHG Emissions, total annual operational GHG emissions from motor vehicles would be approximately ~~144~~108 MT CO₂E per year.

Water Supply

Water for operational activities would include approximately 800,000 gallons per year for photovoltaic module washing and 280,000 gallons per year for application of soil binding agents (if required). As shown in Table 3.1.3-3, annual water use would result in approximately 4 MT CO₂E per year (see Appendix 3.1.1-1).

Decommissioning

Decommissioning activities would be expected to result in substantially lower air quality emissions compared to construction activities due to more stringent engine and motor vehicle standards, including Best Available Control Technology (BACT), at the time of decommissioning. Additionally, major pollutant generating activities would not occur or would be greatly reduced during decommissioning activities. These activities include clearing, grubbing and grading activities; gen-tie construction; intensive water importation and distribution on site associated with earth moving, site preparation, grading, and concrete mixing; and undergrounding of utility cables. As such, the maximum daily construction emissions estimated for the Proposed Project would represent the maximum daily emissions that would occur during any phase of the Proposed Project life, including construction, operation and decommissioning. However, for the purposes of a conservative analysis, it was assumed that decommissioning emissions would equate to emissions estimated for the Proposed Project construction activities. This results in approximately 2,175 MT CO₂E for decommissioning amortized over the life of the project for annual GHG emissions of 73 MT CO₂E.

Conclusion

The Proposed Project is estimated to result in total construction emissions of approximately 2,175 MT CO₂E, ~~total emissions from implementation of decommissioning mitigation of approximately 9372,175~~ MT CO₂E, and annual operational GHG emissions of approximately ~~148~~180258 MT CO₂E per year, including amortized construction emissions of ~~34~~73 MT CO₂E per year and amortized implementation of decommissioning mitigation emissions of 3473 MT CO₂E. As such, the Proposed Project's operational emissions would not exceed the County's screening threshold of 900 MT CO₂E per year. In fact, the Proposed Project would provide more renewable energy in keeping with Measure No. E-3 of the Climate Change

Scoping Plan, which calls for a 33% renewables mix by 2020. The Proposed Project would therefore have a **less than significant impact** on climate change.

3.1.3.3.2 Conflict with an Applicable Plan, Policy, or Regulation Adopted to Reduce GHG Emissions

Guidelines for the Determination of Significance

For the purpose of this EIR, the County's guidance (County of San Diego 2015) applies to both the direct impact analysis and the cumulative impact analysis. A significant impact would result if:

- The project would conflict with an applicable plan, policy, or regulation adopted to reduce greenhouse gas emissions.

Analysis

As previously discussed, in keeping with the renewable energy target under the Scoping Plan and as required by SB X1 2, the Proposed Project would provide a source of renewable energy to achieve or exceed the RPS of 33% by 2020. Renewable energy, in turn, potentially offsets GHG emissions generated by fossil-fuel power plants. The Proposed Project would provide the installed capacity of 20 MW of alternating current (AC).

The County General Plan Objective A: Mitigation —reduction in greenhouse gas emissions, includes Strategy A-2: Reduce non-renewable electrical and natural gas energy consumption and generation (energy efficiency) and Strategy A-3: Increase generation and use of renewable energy sources. The Proposed Project aligns with this objective and these strategies as a renewable (solar) project.

The General Plan includes policies designed to demonstrate the County's commitment to alternative energy and GHG reduction such as policy COS-14.7, Alternative Energy Sources for Development Projects. Encourage development projects that use energy recovery, photovoltaic, and wind energy. This policy directly encourages projects such as the Proposed Project.

The General Plan also includes two conservation policies that target reducing GHG emissions: policies COS-14.9 and COS-14.10. Each of these promotes the reduction in air quality emissions in general and specifically GHG, by requiring incorporation of renewable energy into projects and encouraging the use of low-emission construction vehicles and equipment. As a Solar Energy Project the Proposed Project would incorporate renewable energy generation consistent with Policy COS 14.9. The County encourages the private developers of the Proposed Project to use low-emission construction vehicles and equipment to improve air quality and reduce GHG emissions consistent with Policy COS 14.10.

The Proposed Project would provide a potential reduction in GHG emissions each year of operation if the electricity generated by the solar facility were to be used instead of electricity generated by fossil-fuel sources. Therefore, because the Proposed Project would assist in the attainment of the state's and County's goals by using a renewable source of energy that could displace electricity generated by fossil-fuel-fired power plants, the Proposed Project would comply with the goals and objectives of the state and the County, and impacts would be considered **less than significant**.

3.1.3.4 Cumulative Impact Analysis

Geographic Extent

As GHG emissions and climate change are a global issue, any approved project regardless of its location has the potential to contribute to a cumulative global accumulation of GHG emissions (as opposed to the relatively temporary nature of pollutants related to air quality). The GHG analysis is all cumulative and is developed with County growth projections on a plan basis. The cumulative projects listed are mostly renewable energy projects that have, like the Proposed Project, a beneficial impact on GHG emissions. In theory, the geographic extent of the cumulative contributions to GHGs and climate change is worldwide. However, lead agencies are only able to regulate GHG emissions within their respective jurisdictions; therefore, the geographic extent is primarily contingent upon the area over which lead agencies have authority. As such, the geographic extent for the purposes of the Proposed Project is the southeastern corner of the San Diego Air Basin.

3.1.3.4.1 Generation of Construction-Related and Operational GHG Emissions

The Proposed Project would be constructed in 2016 and would be constructed concurrently with, and in proximity to, other land use and infrastructure development projects (e.g., wind and solar facilities), several of which would result in significant construction-related GHG emissions. Construction-related GHG emissions would be associated with the use of construction equipment, heavy-duty truck trips, and worker vehicle trips. Once operational, the Proposed Project's construction impacts would eventually be offset following completion of construction activities resulting in a net beneficial impact, if the renewable source of energy could displace electricity generated by fossil-fuel-fired power plants. For the purposes of this analysis, it was assumed the Project would generate approximately 2,000 kilowatt-hours (kWh) alternating current annually per installed kilowatt (based on the direct current capacity of PV panels). This factor reflects the available daylight hours, conversion of direct current to alternating current, and various system losses. Using the installed PV capacity of 28 MW (28,000 kilowatts) direct current, the Project is anticipated to generate approximately 56,000,000 kWh per year. The Proposed Project would provide a potential reduction of 27,333 MT CO₂E per year if the electricity generated by the

Proposed Project were to be used instead of electricity generated by fossil-fuel sources. After accounting for the annualized construction and annual operational emissions of ~~149,258~~ MT CO₂E per year, the net reduction in GHG emissions would be ~~27,184,075~~ MT CO₂E per year. This reduction is *not* considered in the significance determination of the Proposed Project's GHG emissions but is provided for disclosure purposes only. See Appendix 3.1.1-1 for details.

The Proposed Project's annualized construction emissions within the cumulative study area would not exceed the County's significance screening criteria. Therefore, the Proposed Project would not contribute to a cumulatively considerable significant impact, and cumulative impacts would be **less than significant**.

3.1.3.4.2 Conflict with an Applicable Plan, Policy, or Regulation Adopted to Reduce GHG Emissions

AB 32 calls for a reduction in GHG emissions to 1990 levels by 2020. Over its lifespan, the Proposed Project would assist in the attainment of the state's goals by utilizing a renewable source of energy that could displace electricity generated by fossil-fuel-fired power plants. AB 2514 establishes the ability for the CPUC to develop energy storage and targets for that storage which would help intermittent renewable energy production facilities such as wind and solar maintain a more continual energy supply and reduce the need for peaker plants that typically use fossil fuels. Cumulative impacts would be **less than significant**. The Proposed Project would therefore be consistent with state initiatives aimed at reducing GHG emissions and in the long term would not contribute to a cumulatively considerable significant impact.

3.1.3.5 Conclusion

The following discussion provides a synopsis of the conclusion reached in each of the above impact analyses, and the level of impact that would occur after mitigation measures, if any, are implemented. The Proposed Project would not require mitigation measures because there were no identified significant impacts relative to GHG.

Generation of Construction-Related and Operational GHG Emissions

Annual operational GHG emissions under the Proposed Project, including annualized construction emissions, would not exceed the County of San Diego 900 MT CO₂E screening threshold. Therefore, impacts would be **less than significant**.

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

Based on Governor Schwarzenegger's call for a statewide 33% RPS, the Climate Change Scoping Plan anticipates that California will have 33% of its electricity provided by renewable resources by 2020. Additionally, AB 32 calls for a reduction in GHG emissions to 1990 levels by 2020. Over its lifespan, the Proposed Project would assist in the attainment of the state's goals by utilizing a renewable source of energy that could displace electricity generated by fossil-fueled power plants. The Proposed Project would therefore be consistent with state and County initiatives aimed at reducing GHG emissions, and impacts would be **less than significant**.

Cumulative GHG Emission Impacts

Once operational, the Proposed Project's construction impacts would eventually be offset, resulting in a net beneficial reduction in GHG emissions, and the Proposed Project's construction emissions within the cumulative study area would not exceed the County's significance screening criteria. Additionally, AB 32 calls for a reduction in GHG emissions to 1990 levels by 2020. Over the lifespan, the Proposed Project would assist in the attainment of the state's goals by using a renewable source of energy that could displace electricity generated by fossil-fueled power plants. The Proposed Project would therefore be consistent with state initiatives aimed at reducing GHG emissions and in the long term would not contribute to a cumulatively considerable significant impact. Cumulative impacts would be **less than significant**.

**Table 3.1.3-1
GHG Sources in California**

Source Category	Annual GHG Emissions (MMT CO ₂ E)	% of Total ^a
Agriculture	37.86	8.3%
Commercial uses	14.20	3.1%
Electricity generation	95.09 ^b	20.7%
Industrial uses	89.16	19.4%
Recycling and waste	8.49	1.9%
Residential uses	28.09	6.1%
Transportation	167.38	36.5%
High GWP substances	18.41	4.0%
Totals^c	458.68	100%

Source: CARB 2014a.

^a Percentage of total has been rounded.

^b Includes emissions associated with imported electricity, which account for 44.07 MMT CO₂E annually.

^c Totals may not sum due to rounding.

Table 3.1.3-2
Estimated Construction GHG Emissions (metric tons/year)

Construction Year	CO ₂ E Emissions
2016	<u>9372,175</u>
Amortized Construction Emissions	<u>3473</u>

Source: See Appendix 3.1.1-1 for complete results.

Table 3.1.3-3
Estimated Operational GHG Emissions (metric tons/year)

Source	CO ₂ E Emissions
Motor (inspection) Vehicles	<u>114108</u>
Water Supply Vehicles	4
Amortized Construction Emissions	<u>3473</u>
Amortized Decommissioning Emissions	<u>3473</u>
Total	<u>149258</u>

Source: See Appendix 3.1.1-1 and Appendix 9.1-7 for complete results.