

## 5.7 Greenhouse Gas Emissions

### GREENHOUSE GAS EMISSIONS

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.7.1 Setting

Globally, temperature, precipitation, sea level, ocean currents, wind patterns, and storm activity are all affected by the presence of greenhouse gas (GHG) pollutants in the atmosphere. In contrast to air quality, that is of regional or local concern, human-caused emissions of GHGs are linked to climate change on a global scale. GHGs allow ultraviolet radiation to enter the atmosphere and warm the Earth's surface and prevent some infrared radiation emitted by the Earth from escaping back into space. Human activity contributes to emissions of six primary GHGs: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF<sub>6</sub>).

The largest anthropogenic source of GHGs is fossil fuel combustion, which results primarily in CO<sub>2</sub> emissions. Other GHG emissions tracked by State inventories occur in much smaller quantities. However, the global warming potential of CH<sub>4</sub> is about 25 times that of CO<sub>2</sub> (CARB, 2014a). The use of sulfur hexafluoride (SF<sub>6</sub>) in power transformers and circuit breakers at power plants, switchyards, and substations also poses a concern, because this pollutant can slowly escape from the equipment, and it has an extremely high global warming potential (one pound of SF<sub>6</sub> has the equivalent warming potential of approximately 22,800 pounds of CO<sub>2</sub>). When quantifying GHG emissions, the different global warming potentials of GHG pollutants are usually taken into account by normalizing their rates to an equivalent CO<sub>2</sub> emission rate (CO<sub>2</sub>e).

When California first formalized a strategy for achieving GHG reductions in 2008, the State produced approximately 487 million metric tons of CO<sub>2</sub> equivalent (MMTCO<sub>2</sub>e), an amount equal to about 537 million tons (CARB, 2014b). (One metric ton (MT) equals 1,000 kilograms, which is 2,204.6 pounds or about 1.1 short tons.) In 2012, California's emissions were approximately 459 MMTCO<sub>2</sub>e (CARB, 2014b) or less than one percent of the 49,000 MMTCO<sub>2</sub>e emitted globally (IPCC, 2014).

### Regulatory Background

**U.S. EPA GHG Mandatory Reporting Program (40 CFR Part 98).** This rule requires mandatory reporting of GHG emissions for industrial facilities and power plants that emit more than 25,000 MTCO<sub>2</sub>e per year. Currently, there are no federal regulations limiting GHG emissions from projects such as the Proposed Project.

**California Global Warming Solutions Act of 2006 (Assembly Bill 32).** This law (AB 32, Chapter 488, Statutes of 2006) requires CARB to adopt a Statewide greenhouse gas emissions limit equivalent to the Statewide GHG emissions levels in 1990, to be achieved by 2020. A longer range GHG reduction goal was set in June 2005 by California Executive Order S-3-05, which requires an 80 percent reduction of greenhouse gases from 1990 levels by 2050.

AB 32 directs the CARB to develop regulations and a mandatory reporting system to track and monitor GHG emissions levels. In passing AB 32, the California Legislature found that:

*Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.*

CARB adopted the 2020 Statewide target and mandatory reporting requirements initially in December 2007 and the AB 32 Scoping Plan in December 2008 (CARB, 2008). In 2014, CARB updated the target and adopted the First Update to the Climate Change Scoping Plan (CARB, 2014a). Enforceable cap-and-trade rules became effective in 2013 for a wide range of large industrial and fossil-fuel burning sources, including electricity generation facilities. In 2015, the program expands to cover GHG emissions from all of the California economy.

Steps taken by the CPUC to address climate change include the requirements imposed on utilities under the Electricity Greenhouse Gas Emission Standards Act (SB 1368<sup>1</sup>), which requires that generation and contracts be subject to a GHG Environmental Performance Standard of 1,100 pounds (or 0.5 metric tons) of CO<sub>2</sub> per megawatt-hour (MWh) of electricity produced. The Emissions Performance Standard applies to base load power from new power plants, new investments in existing power plants, and new or renewed contracts with terms of five years or longer, including contracts with power plants located outside of California.<sup>2</sup> Implementation of the Climate Change Scoping Plan requires careful coordination on the State's energy policies, meaning that CPUC and CARB are working closely to implement the recommendations in the Scoping Plan, especially one key element of the plan: achieving a renewable energy mix of 33 percent that is reliably delivered to electricity customers.

**California Renewable Energy Resources Act of 2011 (Senate Bill X1-2).** In April 2011, Senate Bill (SB) 2 of the 1st Extraordinary Session (SB X1-2) was signed into law. SB X1-2 expressly applies the new 33 percent Renewable Portfolio Standard (RPS) by December 31, 2020 to all retail sellers of electricity and establishes renewable energy standards for interim years of: an average of 20 percent from 2011 through 2013; a minimum of 20 percent thereafter through 2016; and, a minimum of 25 percent by December 31, 2016. This codified the requirement to achieve 33 percent RPS statewide by the end of 2020, consistent with the AB 32 Scoping Plan and the First Update to the Climate Change Scoping Plan (CARB, 2014a).

**Mandatory Reporting of Greenhouse Gas Emissions (17 CCR 95100).** Mandatory reporting of GHG emissions applies to electric generating facilities with a nameplate capacity equal or greater than 1 MW capacity and GHG emissions exceeding 2,500 metric tons per year. As an Electric Power Entity under this rule, SCE must report GHG emissions associated with providing electricity to end-use customers.

**CARB SF<sub>6</sub> Regulations (17 CCR 95350).** In 2010, CARB adopted a regulation for reducing SF<sub>6</sub> emissions from electric power system gas insulated switchgear. The regulation requires owners of such switchgear to: (1) annually report their SF<sub>6</sub> emissions; (2) determine the emission rate relative to the SF<sub>6</sub> capacity of the switchgear; (3) provide a complete inventory of all gas insulated switchgears and their SF<sub>6</sub> capacities;

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<sup>1</sup> Public Utilities Code § 8340 et seq.

<sup>2</sup> See Rule at [http://www.cpuc.ca.gov/PUBLISHED/FINAL\\_DECISION/64072.htm](http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/64072.htm)

(4) produce a SF<sub>6</sub> gas container inventory; and (5) keep all information current for CARB enforcement staff inspection and verification.

### Applicant Proposed Measures

There are no applicant proposed measure related to greenhouse gas emissions.

## 5.7.2 Environmental Impacts and Mitigation Measures

### ***a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?***

*LESS THAN SIGNIFICANT DURING CONSTRUCTION.* Construction of the proposed substation, subtransmission line segments, and other project facilities would result in emission of GHGs from construction equipment at the various work areas and off-site motor vehicle trips carrying workers and materials. Motor vehicles, off-road equipment, and other construction equipment would directly emit CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O due to fuel use and combustion. Motor vehicle fuel combustion emissions in terms of CO<sub>2</sub>e are approximately 95 percent CO<sub>2</sub>, and CH<sub>4</sub> and N<sub>2</sub>O emissions occur at rates of less than 1 percent of the mass of combustion CO<sub>2</sub> emissions. Other GHGs such as SF<sub>6</sub>, hydrofluorocarbons, and perfluorocarbons were not included in the construction emission calculations because construction activities would not emit these GHG constituents.

Emissions for each phase and for each month of proposed activity are calculated based on the proposed quantities and types of equipment and activities. The emission estimates rely on factors from the CARB OFFROAD2011 and EMFAC2011 models and U.S. EPA emission factors. Based on the construction activity forecast, approximately 1,079 MTCO<sub>2</sub>e would be emitted over the entire construction phase of the Proposed Project (SCE, 2014, Revised by Response to Question T-2 Amended). Construction-related emissions would be spread over a development schedule of one year. Construction-related GHG emissions would not recur over the life of the project, but these levels would be under the threshold level of 2,500 metric tons for annual mandatory reporting of GHG (17 CCR 95100). Emissions would also be below threshold levels of 25,000 metric tons adopted by the Eastern Kern Air Pollution Control District (EKAPCD, 2012) and 10,000 metric tons for annually recurring emissions from stationary sources used elsewhere in southern California (SCAQMD, 2011). With total project construction emissions of approximately 1,079 MTCO<sub>2</sub>e (SCE, 2014), construction-related GHG emissions would not have a significant impact on the environment, and the impact would be less than significant.

*LESS THAN SIGNIFICANT DURING OPERATION.* Maintenance of the proposed substation, subtransmission line segments, and other project facilities would result in low levels GHG emissions from the mobile sources used during routine operations by SCE. The proposed installation of new circuit breakers and gas switches at the Banducci Substation would also introduce new gas insulated switchgear that would be a source of GHG due to the leakage of SF<sub>6</sub>. The quantity of potential SF<sub>6</sub> emissions and the mobile source emissions in terms would be 11 metric tons CO<sub>2</sub>e (SCE, 2014, PEA Table 4.7-1). The new circuit breakers would be required to comply with the CARB-adopted standards for SF<sub>6</sub> use in gas insulated circuit breakers. Based on SF<sub>6</sub> emission rates at the maximum leakage rate allowed by the manufacturer of 0.5 percent (SCE, 2014, PEA Appendix C), the CARB requirements for control of SF<sub>6</sub> and recordkeeping, the actual GHG emissions would be minor and well below the threshold of 2,500 metric tons for mandatory reporting. This level of GHG would not have a significant impact on the environment, and the impact associated with the GHG emissions would be less than significant.

***b. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?***

*LESS THAN SIGNIFICANT.* The Climate Change Scoping Plan, initially approved by CARB in 2008 with an update in 2014 (CARB, 2014a), provides an outline of actions to reduce California's GHG emissions. The scoping plan requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs.

The Proposed Project would improve the infrastructure used in distribution of California's energy supply, and would not affect California's ability to supply renewable energy. The Proposed Project would not affect SCE's ability to meet its RPS obligations. Similarly, the Proposed Project would not affect or conflict with any local goals or programs to achieve GHG reduction targets.

SCE would comply with CARB SF<sub>6</sub> regulations to inventory, report, and minimize SF<sub>6</sub> leaks through the use of new technology. By complying with these requirements, the Proposed Project would not conflict with any applicable GHG management plan, policy, or regulation. Therefore, this impact would be less than significant.