4.7 Greenhouse Gas Emissions

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the Santa Barbara County Reliability Project (proposed project) with respect to climate change and greenhouse gas (GHG) emissions. Climate Action Plans, Climate Adaptation Plans, and other relevant local and regional plans are addressed in this section and in Sections 4.3, "Air Quality"; 4.8, "Hazards and Hazardous Materials"; and 4.15, "Transportation/Traffic."

4.7.1 Environmental Setting

The term "climate change" refers to "any significant change in measures of climate (such as temperature, precipitation, or wind) that lasts for an extended period (decades or longer)" (EPA 2011). This term is often used interchangeably with the term "global warming." Climate change, or global warming, is the term used to describe an average increase in the temperature of the atmosphere near the earth's surface and in the troposphere, which can contribute to changes in global climate patterns. The global distribution of temperature increase has varied, and in some locations average temperatures have actually decreased. Climate change has been attributed to a variety of causes, including both natural and human activity (EPA 2011). Current scientific research indicates that potential effects of climate change include variations in temperature and precipitation, sea-level rise, impacts on biodiversity and habitat, impacts on agriculture and forestry, and human health and social impacts (CNRA 2009).

Greenhouse Gases

GHGs are gases that allow solar radiation to pass through the earth's atmosphere but prevent heat from escaping, resulting in atmospheric warming. Certain GHGs occur naturally and help balance the earth's temperature; however, research indicates that, since the advent of the Industrial Revolution, human activity has resulted in an elevated concentration of some of these gases in the atmosphere. In particular, concentrations of carbon dioxide (CO_2) (from the burning of fossil fuels) have increased significantly.

Much of the carbon in the atmosphere is absorbed by natural "carbon sinks," such as forests or ocean kelp; CO_2 is then emitted into the atmosphere through natural processes such as animal and plant respiration and oceanic and geological activity. These natural processes represent "sources." When balanced, the amount of CO_2 emitted from sources and absorbed by carbon sinks is roughly equal (a process known as the "carbon cycle"). However, as emission levels rise from human activity such as automobile use, carbon sinks become overwhelmed and are unable to sequester the increasing amounts of CO_2. In addition, other human activity such as deforestation can lead to the reduction of sinks. The resulting increase in GHGs in the atmosphere is now considered one of the key causes of global climate change.

In 1988, the World Meteorological Organization and United Nations formed the Intergovernmental Panel on Climate Change (IPCC) as a joint effort to assess the impact of human activity on the global climate. In 1990, the IPCC issued its first assessment report, which helped identify climate change as a serious issue and laid the groundwork for the formation of the United Nations Framework Convention on Climate Change (UNFCCC). The second assessment report, issued by the IPCC in 1995, contributed to the drafting of the Kyoto Protocol, which was adopted by the UNFCCC in 1997. The Kyoto Protocol asked signatories to the UNFCCC to commit to reducing emissions of four

primary GHGs (CO_2, methane [CH_4], nitrous oxide [N_2O], and sulfur hexafluoride [SF_6]), and two secondary groups of GHGs (hydrofluorocarbons [HFCs] and perfluorocarbons [PFCs]) to 5 percent below 1990 emission levels by 2012. At the time of this writing, the United States remains the only signatory to the UNFCCC that has not ratified the Kyoto Protocol. The IPCC issued its most recent assessment report in 2007 and is currently working on the fifth assessment report, which will be completed in 2013/2014 (IPCC 2011).

In 2006, the State of California enacted the California Global Solutions Warming Act of 2006 (Assembly Bill [AB] 32), requiring a reduction in GHG emissions in the state to 1990 levels by 2020. AB 32 targets the same GHGs identified under the Kyoto Protocol. These gases are described further below.

Carbon Dioxide

CO_2 is a colorless, odorless gas generated by both natural and human activity. Natural sources of CO_2 include respiration by bacteria, fungus, and animals; decomposition of organic matter; evaporation of ocean water; and geological processes. The primary human-induced sources of CO_2 are combustion of fossil fuels, natural gas, and wood.

Methane

CH_4 is a highly flammable gas that is a primary component of natural gas. Similar to CO_2, CH_4 is produced both by natural and human activity. Natural sources of CH_4 include anaerobic decay of organic matter, geological deposits (e.g., natural gas fields), and cattle. Human-induced sources include emissions generated by the decay of organic material in landfills and fermentation of manure and other organic material.

Nitrous Oxide

As with CO_2 and CH_4, N_2O is produced by both natural and human activity. Natural sources include microbial action in soil and water, particularly at tropical latitudes. Human-induced sources include emissions from manufacturing facilities, fossil fuel power plants, and motor vehicles.

Sulfur Hexaflouride

SF_6 is a colorless, odorless, non-flammable, non-toxic gas used mainly as an insulator (when mixed with other gases, such as argon) in the manufacture of electronics.

Hydrofluorocarbons

HFCs are human-made compounds consisting of carbon, hydrogen, and fluorine atoms. HFCs were introduced as replacements for atmospheric ozone–depleting chemicals in various industrial and commercial applications. They are used in solvents, refrigerants, firefighting agents, and aerosol sprays.

Perfluorocarbons

PFCs are human-made chemicals consisting of carbon and fluorine atoms. As with HFCs, PFCs were introduced as an alternative to atmospheric ozone–depleting chemicals and are used in similar industrial and commercial applications.

Global Warming Potential

The effect of a particular GHG on global climate change depends on its global warming potential (GWP). Table 4.7-1 shows the GWP for the six GHGs described above. GWP is determined by a number of factors, including a GHG's molecular structure, its ability to absorb infrared radiation, and the amount of time it can exist in the atmosphere before breaking down. These factors help determine the amount of warming potential a pound of GHG would have relative to a pound of CO_2. For example, a pound of CH_4 has 21 times the warming potential of a pound of CO_2.

Table 4.7-1 Global Warming Potential For Greenhouse Gases

Greenhouse Gas	Global Warming Potential (relative to CO_2)
Carbon Dioxide (CO_2)	1
Methane (CH_4)	21
Nitrous Oxide (N_2O)	310
Hydrofluorocarbons (HFCs)	140–11,700
Perofluorocarbons (PFCs)	6,500–9,200
Sulfur Hexafluoride (SF_6)	23,900

Source: IPCC 2007

The California Air Resources Board (CARB) reports that CO_2 represents almost 90 percent of the GHG emissions produced in California (CARB 2008). Because CO_2 is such a prevalent GHG, and the GWP for other GHGs is calculated relative to CO_2, GHGs in the atmosphere are reported in terms of CO_2 equivalency (CO_2e). CO_2e measures GHGs by multiplying the mass of each GHG emitted by its GWP to determine the equivalent amount of CO_2. For example, 1 pound of CH_4 is equivalent to 21 pounds of CO_2.

Potential Effects from Climate Change

In 2008, California Governor Arnold Schwarzenegger issued Executive Order S-13-08, directing the California Natural Resources Agency (CNRA) to determine how state agencies can respond to the challenges posed by climate change. As a result, the CNRA worked with several state agencies to draft the 2009 California Climate Adaptation Strategy (CCAS). A summary of the potential effects of climate change, as identified in the CCAS, is presented below.

Temperature and Precipitation

GHGs can remain in the atmosphere for decades; thus, the temperature changes over the next 30 to 40 years will largely be determined by past emissions. By 2050, temperatures could increase by an additional 1.8 to 5.4 degrees Fahrenheit (CNRA 2009). California would likely continue to have relatively cool wet winters and dry hot summers; however, temperature increases could become more severe in summer than winter, and inland areas could experience more pronounced warming than coastal regions. Heat waves could also increase in frequency and intensity.

Precipitation patterns are anticipated to change due to increasing temperatures, leading to more rainfall and less snow. This would affect California's drinking water supply, which currently originates mainly as snowmelt runoff. More frequent flood events, due to faster runoff, could also increase stress on state and local infrastructure. Finally, these changes in precipitation could lead to more periods of drought, which could have a negative effect on native ecosystems.

Sea-Level Rise

Recent studies show that sea levels rose by as much as 7 inches during the 20th century and are anticipated to rise up to 55 inches by the end of this century (CNRA 2009). Furthermore, even if emissions were substantially lowered, research shows that sea levels will continue to rise; thus, adaptation strategies will be an important part of dealing with this impact (CNRA 2009). Sea-level rise could have a negative effect on coastal wetlands and marshes through inundation and could also damage agricultural activities by way of salt water intrusion into fresh water aquifers. Additionally, loss of these habitats as a storm buffer could increase storm-related impacts, such as depleted beaches and property damage.

Biodiversity and Habitat

As temperatures and precipitation patterns change, plant and animal species adapted to specific conditions could become threatened. These species may have to shift their geographic range to adapt to the changes; however, if the species are unable to adapt, they may face extinction. As the climate shifts, changes in wildfire patterns may also emerge. While many species in California are adapted to regular fire events, higher temperatures may also result in an increase in the frequency and intensity of fires, which could harm the ability of native plant species to re-germinate between events (CNRA 2009).

Overall, climate change could result in very harmful effects on biodiversity. Shifts in species ranges could increase the likelihood of habitat fragmentation, and changes in precipitation could lead to increased periods of drought, making ecosystems vulnerable to colonization by invasive species.

Agriculture and Forestry

The State of California has some of the most productive agricultural regions found in the world. Shifts in climate may impact the ability of certain crops (e.g., grapes, other fruits, and nuts) to produce substantial high-quality yields. Sea-level rise, changes in growing season length, variation in precipitation, and changes in water supply could affect agricultural productivity, which could have an impact on food supplies.

The range of forest lands in the state will also likely shift in response to climate change. Temperature rise has the potential to make current forest ranges inhospitable, expand insect populations that impact tree mortality, and allow for the colonization of invasive non-native species.

Human Health and Social Impacts

Climate change could also result in increased public health risks, including an increase in mortality and morbidity due to heat-related illness and a rise in respiratory illness due to poor air quality caused by higher temperatures. Plant species habitat that shifts due to climate change may also lead to variations in the timing and duration of allergies and the colonization of new habitat by disease vectors such as non- native animals and insects. The elderly, chronically and mentally ill, infants, and the economically disadvantaged will be the most at risk of the negative effects of climate-related illness.

Greenhouse Gas Inventories

The latest GHG inventory from the U.S. Environmental Protection Agency (EPA) indicates that the U.S. emitted 6,702 million metric tons of CO_2e ($MMTCO_2e$) in 2011 (EPA 2013). The state of California makes up a substantial contribution of those GHG emissions: California produced 451.6 $MMTCO_2e$, according to the most recent inventory (CARB 2013a). The state represents the second largest contributor in the U.S. and the 15th largest emitter of GHGs in the world (CEC 2006; EPA 2012).

4.7.1.1 Local Setting

The proposed project components would be located within four major jurisdictions in the State of California: unincorporated Santa Barbara County, the City of Carpinteria, federal lands administered by the U.S. Forest Service (USFS), and unincorporated Ventura County. Given the regional nature of climate change impacts, this section describes reported GHG emissions data applicable to the proposed project area.

State of California

CARB publishes and maintains a GHG inventory that compiles statewide anthropogenic GHG emissions and sinks. CARB has also produced a business-as-usual emissions forecast for the year 2020. The inventory and forecasts include estimates for seven gases: CO_2, CH_4, N_2O, SF_6, NF_3, HFCs, and PFCs.

Table 4.7-2 summarizes CARB's GHG Inventory for the period 2000 to 2010, presented by the categories defined in the state Scoping Plan. As shown in this table, major contributors to GHG emissions statewide include transportation, industrial sources, and electric power (includes in-state generation and imports). Over the last decade, California's gross GHG emissions decreased 2.9 percent from 465.2 $MMTCO_2e$ in 2000 to 451.6 $MMTCO_2e$ in 2010, with a maximum of 492.6 $MMTCO_2e$ in 2004 (CARB 2013a). Statewide GHG emissions decreased slightly in 2010, following a marked drop in 2009 associated with the economic recession that included a decrease in on-road transportation, electricity generation, and industrial emissions.

Santa Barbara County

The Santa Barbara County Air Pollution Control District (SBCAPCD) and the Santa Barbara County Association of Government (SBCAG) developed a GHG emissions inventory for countywide sources and for the unincorporated portions of the County.

Tables 4.7-3 and 4.7-4 show total GHG emissions from sources located countywide and within unincorporated areas, respectively. Overall, GHG emissions reported for the entirety of Santa Barbara County in 2007 represent about 1.1 percent of the state totals, and about 28 percent of these countywide emissions are mostly from indirect sources associated with the electric power sector (County of Santa Barbara Planning and Development 2011).

Table 4.7-2 California Greenhouse Gas Inventory for 2000–2010

Sector	GHG emissions per year ($MMTCO_2e$)										
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Transportation	171.87	175.01	181.51	179.47	186.46	186.34	186.95	187.38	178.18	173.34	173.18
Electric Power	105.76	122.91	109.70	113.65	116.25	108.89	105.55	114.97	121.16	103.58	93.30
Commercial and Residential	42.27	41.13	43.10	41.47	42.83	41.18	41.85	42.07	42.39	42.61	43.89
Industrial	98.43	96.43	97.12	95.29	96.97	96.04	94.29	91.88	94.32	83.60	85.96
Recycling and Waste	6.25	6.34	6.29	6.39	6.34	6.65	6.75	6.71	6.90	6.94	6.98
High GWP	10.72	11.27	11.87	12.57	13.32	13.90	14.26	14.27	14.44	14.76	15.66
Agriculture	29.75	29.93	33.07	31.48	33.24	33.48	34.59	33.44	34.34	32.81	32.45
Forestry (Wildfires)	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Total Gross Emissions	**465.25**	**483.12**	**482.87**	**480.51**	**492.60**	**486.68**	**484.43**	**490.89**	**491.92**	**457.83**	**451.60**
Forested Lands Net CO_2	-4.48	-4.29	-4.16	-4.17	-4.17	-4.03	-3.88	-3.95	-3.85	-3.81	(*)
Total Net Emissions	**460.77**	**487.83**	**478.71**	**476.35**	**488.43**	**482.65**	**480.55**	**486.94**	**488.06**	**454.01**	**(*)**

Source: CARB 2013b
(*) Data not reported by CARB.
Key:
CO_2 carbon dioxide
GHG greenhouse gas
GWP global warming potential

Table 4.7-3 2007 Santa Barbara Countywide Greenhouse Inventory

Sector	GHG Emissions[1] ($MMTCO_2e$)
Residential	0.75
Agriculture and Forestry	0.34
Industrial	1.04
Commercial	1.10
Transportation (Air/Marine/Rail)	0.13
On-road mobile sources	1.93
Total	**5.29**

Source: County of Santa Barbara Planning and Development 2011
Notes:
[1] Reported numbers in metric tons have been converted to million metric tons and rounded up to two decimals.

Table 4.7-4 2007 Unincorporated Santa Barbara County GHG Inventory

Sector	GHG Emissions[1] ($MMTCO_2e$)
Residential	0.22
Agriculture and Forestry	0.34
Industrial	0.51
Commercial	0.19
Transportation (Air/Marine/Rail)	0.03
On-road mobile sources	0.50
Total	**1.79**

Source: County of Santa Barbara Planning and Development 2011
Notes:
[1] Reported numbers in metric tons have been converted to million metric tons and rounded up to two decimals.

As shown in Tables 4.7-3 and 4.7-4, the distribution of emissions by sector in Santa Barbara County diverges from the statewide profile presented in Table 4.2-3, as a result of the particular land use and demographics of the area. For example, the proportion of agricultural emissions in the unincorporated County is approximately 14 percent of the total emissions, which is greater than the state inventory of 6 percent for agriculture and forestry. This result is expected, given that Santa Barbara County is a farming intensive region with approximately 80 percent of the unincorporated county zoned for agricultural uses. Furthermore, the predominance of agricultural, industrial, and transportation sources results in a higher proportion of CO_2, methane, and N_2O compared to the state reported emissions (County of Santa Barbara Planning and Development 2011).

Ventura County

Ventura County is part of the Southern California Association of Government (SCAG) area. As shown in Table 4.7-5 below, activities in the SCAG region accounted for approximately 231 $MMTCO_2e$ in 2008, about 48 percent of the statewide emissions for the same period. The principal

sources of the SCAG's GHG emissions are transportation, electricity consumption, and fuel use for residential, commercial, and industrial purposes (SCAG 2012).

Table 4.7-5 Southern California Association of Governments Historical and Baseline Greenhouse Gas Emissions

Sector	GHG emissions per year (million metric tons of CO_2 equivalent, $MMTCO_2e$)				
	1990	2000	2005	2008	2010
Electricity Consumption	56.3	63.3	59.3	58.0	55.0
Residential, Commercial, Industrial Fuel Use	39.8	41.4	41.0	37.5	36.8
Transportation	75.5	85.7	93.5	92.4	91.8
Fossil Fuel Industry	17.1	19.5	19.3	20.0	20.3
Industrial Processes	3.8	8.6	10.6	11.0	11.4
Waste Management	4.8	4.5	5.0	5.1	5.3
Agriculture	3.7	3.3	3.2	3.1	3.1
Forestry and Land Use	4.5	3.6	15.5	3.6	1.4
Total Gross Emissions	**205.5**	**229.8**	**247.3**	**230.7**	**225.1**
Emission Sinks	-0.4	-0.5	-0.5	-0.7	-0.5
Total Net Emissions	**205.0**	**229.3**	**246.8**	**230.2**	**224.6**

Source: SCAG 2012
Key:
CO_2 carbon dioxide
GHG greenhouse gas
$MMTCO_2e$ million metric tons of carbon dioxide equivalent

U.S. Forest Service Region 5 (Pacific Southwest)

Segment 4 of the proposed project's 66-kilovolt (kV) subtransmission line would traverse about 5.1 miles within the Los Padres National jurisdiction, which is located in lands administered by the USFS Region 5 (Pacific Southwest). In compliance with Executive Order 13514 "Federal Leadership in Environmental, Energy, and Economic Performance," the USFS is participating in the EPA Climate Leaders program. As part of this effort, Region 5 joined the California Climate Action Registry as a reporting member in 2007.

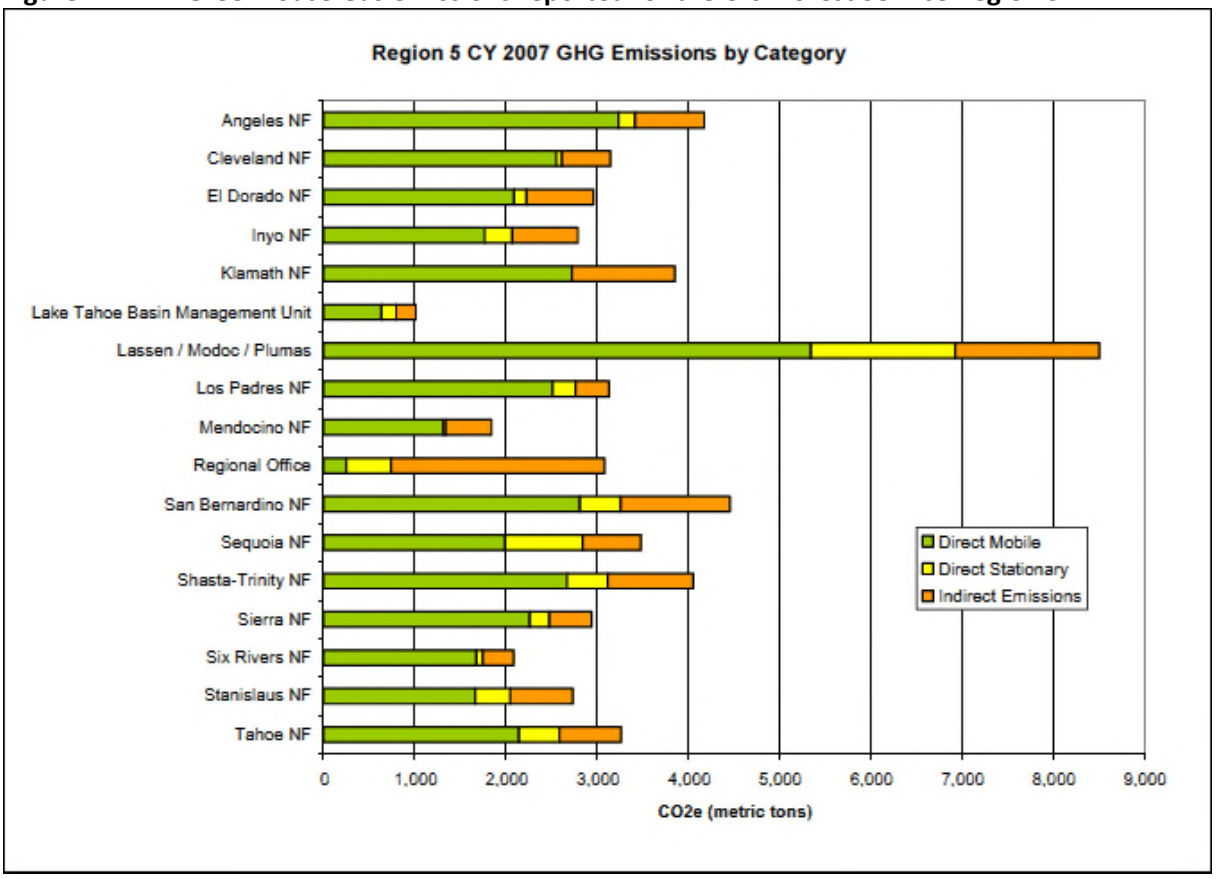
Figure 4.7-1 shows GHG emissions from the Region 5 operations in 2007, including:

(1) Direct emissions: mobile and stationary combustion sources, process emissions from manufacturing, and fugitive sources, including leaks of HFCs from air conditioning systems;

(2) Indirect emissions from energy used in its facilities: purchased electricity, steam, and district heating or cooling); and

(3) Optional reporting: additional items for voluntary reporting, such as employee commuting, business travel, and off-site waste removal.

Figure 4.7-1 Greenhouse Gas emissions reported for the U.S. Forest Service Region 5



Source: USFS 2008.

The bulk of GHG emissions for Region 5 are a result of direct mobile emissions (65 percent), while stationary emissions, mostly from propane use, make up the smallest fraction of emissions in the same region (11 percent). GHG emissions from the Los Padres National Forest represent a fraction of the overall Region 5 emissions, with a total of 3,132 metric tons CO_2e reported for calendar year 2007 (USFS 2008).

4.7.2 Regulatory Setting

This subsection summarizes federal, state, and local laws, regulations, and standards that govern climate change and GHGs in the proposed project area.

4.7.2.1 Federal

The EPA is responsible for implementing federal policy to address global climate change. The federal government administers public/private partnership programs to reduce GHG emissions generated in the U.S.; these programs focus on energy efficiency, renewable energy, CH_4 and other non-CO_2 gases, agricultural practices, and implementation of technologies to reduce GHGs.

The EPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufactures of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions. In 2010, the EPA issued a Final Rule that set a threshold of 75,000 metric tons of CO_2e per year for GHG emissions.

In May 2010, the EPA issued the GHG Tailoring Rule, which establishes an approach to permitting GHG emissions that focuses initially on the largest industrial sources. As of May 2012, new facilities with GHG emissions of at least 100,000 tons per year CO_2e, and existing facilities with the same emissions levels and those making changes that would increase GHG emissions by at least 75,000 tons per year CO_2e, are required to obtain Prevention of Significant Deterioration (PSD) permits. Facilities that must obtain a PSD permit to cover other regulated pollutants must also address GHG emissions increases of 75,000 tons per year CO_2e or more. New and existing sources with GHG emissions above 100,000 tons per year CO_2e must also obtain operating permits.

4.7.2.2 State

California Global Solutions Warming Act of 2006 (Assembly Bill 32)

AB 32, enacted in 2006, required CARB to:

- Adopt statewide limits on GHG emissions by January 1, 2008, that would reduce GHG emissions to 1990 levels by 2020;
- Identify the 1990 statewide level of GHG emissions to serve as the emissions limit to be achieved by 2020 (Health and Safety Code [HSC] §38550);
- Develop a scoping plan to identify the best method for reaching the 2020 limit (HSC §38561);
- Adopt a regulation requiring the mandatory reporting of GHG emissions (HSC §38530);
- Adopt regulations governing discrete early actions that could be enforceable on or before January 1, 2010 (HSC §38560.5);
- Ensure that early, voluntary reductions receive appropriate credit in the implementation of AB 32 (HSC §38562(b)(3));
- Convene an Environmental Justice Advisory Committee to advise CARB in developing the Scoping Plan and any other pertinent matter in implementing AB 32 (HSC §38591); and
- Appoint an Economic and Technology Advancement Advisory Committee to provide recommendations for technologies, research, and GHG emission reduction measures (HSC §38591).

To meet the requirements of AB 32, in December 2007, CARB approved a 2020 emission limit of 427 $MMTCO_2e$ GHGs and adopted a regulation requiring the largest industrial sources in the state to report and verify their GHG emissions. CARB also identified nine discrete early action measures that would regulate GHG emissions from landfills, motor vehicle fuels, refrigerants in cars, tire pressure, port operations, and other sources, including ship electrification at ports and reduction of high GWP gases in consumer products (CARB 2011).

In October 2008, CARB released the Climate Change Proposed Scoping Plan (AB 32 Scoping Plan) evaluating GHG impacts and proposing strategies the state would use to reduce GHG emissions as required by AB 32. The AB 32 Scoping Plan, approved by CARB in December 2008, includes the main strategies the state will use to reduce GHGs. Actions to reduce the emission of GHGs that are included in the AB 32 Scoping Plan include direct regulation of GHG emissions, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and a program implementation regulation to fund the program (CARB 2011).

Executive Order S-3-05

Executive Order S-03-05, issued on June 1, 2005, mandates a reduction of GHG emissions to year 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. The second goal of Executive Order S-03-05 was included as a part of AB 32; however, the third goal, an emissions reduction target for 2050, remains in effect subject to repeal of the Executive Order.

Senate Bills 1078 and 107

California's Renewables Portfolio Standard (RPS) was established under Senate Bill (SB) 1078 in 2002. The RPS requires all retail electric service suppliers to increase procurement of power from eligible renewable energy resources by at least 1 percent of retail sales annually, until reaching a total of 20 percent by 2010. In 2006, SB 1078 was passed to help accelerate the implementation of the RPS by introducing tradable renewable energy credits as an incentive towards accomplishing the objectives of SB 1078.

Executive Order S-14-08 and Executive Order S-21-09

Executive Order S-14-08, issued in November 2008, mandates that retail suppliers of electric services increase procurement from eligible renewable energy resources to 33 percent by 2020. This was followed by issuance of Executive Order S-21-09, which charges CARB with establishing a regulation consistent with this 33 percent target by 2020.

Senate Bill 97

SB 97 was enacted in 2007 to include GHG emissions as a California Environmental Quality Act (CEQA) environmental category. This bill directs the Governor's Office of Planning and Research to develop draft CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions" by July 1, 2009, and directs the CNRA to certify and adopt the CEQA guidelines by January 1, 2010.

On December 30, 2009, the CNRA adopted amendments to the CEQA Guidelines in the California Code of Regulations (CCR). The amendments went into effect on March 18, 2010.

Senate Bill 1368

SB 1368, enacted in 2006, prohibits local publicly owned electric utilities, electrical corporations, electric service providers, and community electrical aggregators from entering into long-term financial commitments in baseload generation by power plants unless they comply with a GHG emissions performance standard (EPS) jointly established by the CEC and the California Public Utilities Commission (CPUC). The EPS established a standard for baseload generation owned by, or under long-term contract to, publicly owned utilities of 1,100 pounds CO_2 (0.500 metric tons) per megawatt-hour.

4.7.2.3 Regional and Local

Santa Barbara County

Pursuant to AB 32, SB 97, and SB 375, the Santa Barbara County Board of Supervisors adopted Resolution 09-059 "to take immediate, cost effective and coordinated steps to reduce the County's collective GHG emissions" in order to protect the community from the effects of climate change and implement programs to comply with the state GHG emission reduction goals (County of Santa Barbara Planning and Development 2011).

To implement Resolution 09-059, the County is currently developing a Climate Action Strategy (CAS) to address GHG emissions. The CAS lays out GHG Emission Reduction Measures that have been identified through multiple methods in all emission sectors. A first stage of the CAS includes a Climate Action Study. This study includes a GHG inventory and forecast for the unincorporated portion of the county, a discussion of GHG emission reduction target options that the County could pursue, a list of current County activities that reduce GHG emissions, evaluation of potential additional Emission Reduction Measures the County could implement, and recommendations for implementation of the Study through a Climate Action Plan (County of Santa Barbara 2013).

In addition to the CAS, the Santa Barbara County 2010 Clean Air Plan developed by the SBCAPCD includes a climate protection chapter, with an inventory of CO_2 emissions in the county; however, this chapter is informational and not regulatory (SBCAPCD 2013).

Ventura County

In 2006, the Ventura County Board of Supervisors directed the preparation of a Climate Change Action Plan, which followed with the creation of a County Climate Change Action Team. In 2011, the Board of Supervisors approved the establishment of 2005 as the Countywide GHG emission inventory baseline and a target emissions reduction goal of 15 percent below this baseline by year 2020. To attain this goal, the draft Climate Action Plan presents 15 commitments intended to be used as guidelines for future County operations and decisions. As of the date of publication of this EIR, Ventura County has not formally adopted a Climate Change Action Plan, including goals and policies for unincorporated areas (County of Ventura 2011).

On December 2011, the Ventura County Air Pollution Control District (VCAPCD) adopted amendments to Rules No. 2, 23, 33, 33.1, 35, and 76 to implement the EPA GHG tailoring requirements for permitting stationary sources and modification projects under the PSD and title V programs of the Clean Air Act. The proposed project would not involve stationary sources, as defined by federal, state, and local Air Pollution Control District (APCD) regulations.

4.7.3 Impact Analysis

4.7.3.1 Methodology and Significance Criteria

Methodology

The applicant used the California Emission Estimator Model (CalEEMod) for the estimation of GHG emissions from the proposed project activities, using the following input data: equipment lists, vehicle fleet and miles traveled, estimated land disturbance, and proposed project schedule. CalEEMod calculates criteria pollutant and GHG emissions from a variety of land uses and has been adopted for air pollution control and air quality management districts in California since July 1,

2012. The model quantifies direct emissions from construction and operation (including vehicle use), as well as indirect emissions, such as energy use, solid waste disposal, vegetation planting and/or removal, and water use. Further, the model identifies mitigation measures to reduce criteria pollutant and GHG emissions, along with calculating the benefits achieved from measures chosen by the user. The GHG mitigation measures were recently developed and adopted by the California Air Pollution Control Officers Association.

The results reported in the CalEEMod output files were compared with the applicable significance criteria for assessing GHG impacts recommended by the SBCAPCD and VCAPCD. The districts have not officially adopted GHG thresholds of significance for land projects within their jurisdictions; however, both agencies have published recommendations for assessing impacts on GHG emissions and climate change. These recommendations are summarized below.

Significance Criteria

Pursuant to CEQA Guidelines (Section §15064.4), the lead agency for the proposed project has the discretion to determine, in the context of the project, a model or methodology to quantify GHG emissions, as well as to establish significance thresholds for evaluating potential impacts associated with them. The significance criteria were defined based on the checklist items in Appendix G of the CEQA Guidelines. An impact is considered significant if the project would:

a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Santa Barbara County Recommended Thresholds of Significance

Santa Barbara County is currently developing a Climate Action Strategy and Climate Action Plan based on the GHG emissions inventory data available. Until County-specific significance thresholds applicable to GHG emissions are developed and formally adopted, the County has proposed to refer to the Bay Area Air Quality Management District (BAAQMD) standards for determinations of impact significance with respect to GHG emissions as an interim measure. Given the similarities in population growth, land use patterns, General Plan policies, and behaviors in Santa Barbara County and several Bay Area counties, future land use development has been considered as similar for the local agencies (County of Santa Barbara, n.d.). In 2010, the BAAQMD adopted two methods and thresholds applicable for operation of non-stationary sources:

1. Gap Analysis Approach Significance Threshold: 1,100 MT of CO_2e/year for other than stationary sources.
2. Efficiency-based Approach Significance Threshold: 4.6 MT of CO_2e/year per Service Population for other than stationary sources (applicable statewide).[1]

[1] The efficiency-based threshold is not based on region-specific data and is mostly applicable to transportation and infill projects. It was determined by dividing the emissions inventory goal for 2020 (for land use–related sectors only) by the estimated 2020 population and employment. The number given by this calculation provides what would be considered a GHG-efficient project if its emissions were to remain below that level (County of Santa Barbara n.d.).

However, these 2010 adopted thresholds of significance were challenged in a lawsuit.[2] As a result of this legal process, the court issued a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them until the APCD had complied with CEQA (BAAQMD 2012).

Ventura County Recommended Thresholds of Significance

On September 2011, the Ventura County Air Pollution Board requested the VCAPCD staff to report on possible GHG significance thresholds for evaluating GHG impacts of land use projects within the County's jurisdiction pursuant to CEQA. Given that Ventura County is adjacent to the South Coast Air Quality Management District (SCAQMD) jurisdiction and is a part of the SCAG region, the VCAPCD recommends the use of local GHG emission thresholds of significance for land use development projects at levels consistent with those set by the SCAQMD (VCAPCD 2011). The SCAQMD has put its GHG threshold adoption efforts on hold over the past years; however, for the purpose of impact analysis, lead agencies have referred to the SCAQMD's interim GHG significance thresholds adopted in 2008 for projects where the District is the lead agency (SCAQMD 2008). The applicable SCAQMD recommended GHG emission threshold is the following:

- GHG emissions from industrial project < 10,000 $MTCO_2e$/year, including construction emissions amortized over 30 years and added to operational GHG emissions

Lead Agency Greenhouse Gas Threshold of Significance

Considering that the proposed project components would be constructed within both Santa Barbara County and Ventura County limits, and in the absence of officially adopted thresholds of significance for GHG emissions at these jurisdictions, the CPUC (Lead Agency) has determined to use the SCAQMD Interim GHG Significance Threshold of 10,000 MT CO_2e/year for the purpose of this environmental impact report (EIR) analysis. This selection is based on the fact that the most stringent threshold of significance (1,100 MT CO_2e/year for operational emissions, recommended by Santa Barbara County) has been legally challenged and removed from District guidelines by the time of publication of this EIR.

4.7.3.2 Applicant Proposed Measures

The applicant has not identified any potential significant impacts on GHG emissions as part of the Proponent Environmental Assessment; therefore, no GHG-specific applicant proposed measures (APMs) have been considered as part of the design of the proposed project. However, reductions in combustion emissions from fossil-fueled equipment associated with implementation of APM AQ-2 are anticipated to have an indirect effect on reducing GHG emissions from heavy duty construction equipment and vehicles. Refer to Chapter 2, Table 2-10 for a summary of the proposed project APMs.

[2] On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the APCD had failed to comply with CEQA when it adopted the thresholds. The court did not determine whether the thresholds are or are not based on substantial evidence and thus valid on the merits (BAAQMD 2012).

4.7.3.3 Environmental Impacts

Overview of Project-Specific Greenhouse Gas Emissions

The proposed project would primarily cover 66-kV subtransmission line construction/ reconductoring and installation of telecommunication systems at three substations. The majority of the construction GHG emissions would be associated with use of combustion off-road equipment and vehicles. In addition, temporary construction activities would disturb over 200 acres of land and remove 530 trees. Tables 4.7-6 and 4.7-7 provide a summary of construction and operational emissions estimated by the applicant for the proposed project using CalEEMod. Operations and maintenance emissions from the proposed project would be similar to those from the existing 66-kV system and substations operated by the applicant in the same geographical area. The applicant estimates that a maximum of 15 vehicle trips per month would occur during operation.

Table 4.7-6 Project-specific Construction Emissions

Year	Proposed Project Component	Annual GHG Emissions (MT CO_2e/year)[1]
2015	66-kV Subtransmission Line	3,581
	Substations	241
	Total 2015	**3,822**
2016	66-kV Subtransmission Line	564
	Substations	19
	Total 2016	**583**

Source: SCE 2012
Notes:
[1] GHG emissions estimated by the applicant after implementation of proposed air quality applicant proposed measures. 66-kVsubtransmission line emissions in 2014 include retaining wall construction (30 units) and installation of four J-Towers in Segment 4 instead of TSPs.
Key:
GHG Greenhouse gas
MT Metric tons

Table 4.7-7 Project-specific Operations and Maintenance Emissions

Proposed Project Component	Annual GHG Emissions (MT CO_2e/year)
66-kV Subtransmission Line and Substation O & M[1]	10
Amortized 30-year construction emissions[2]	147
Total Operational Emissions	**157**
CPUC-Applied SCAQMD Threshold[3]	10,000
Exceeds Threshold of Significance?	**No**

Source: SCE 2012
Notes:
[1] GHG emissions estimated by the applicant using CalEEMod and assuming a maximum of 15 vehicles per year for routine maintenance.
[2] Amortized GHG emissions were estimated by adding construction emissions presented in Table 4.7-6 for the years 2014 and 2015 and dividing the total by 30 years.
[3] Applicable Threshold of Significance selected by Lead Agency based on recommended criteria from VCAPCD.

Table 4.7-7 Project-specific Operations and Maintenance Emissions

Proposed Project Component	Annual GHG Emissions (MT CO_2e/year)

Key:

CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
GHG	greenhouse gas
MT	metric tons
SCAQMD	South Coast Air Quality Management District
O & M	Operation and Maintenance
VCAPCD	Ventura County Air Pollution Control District

Operation and maintenance would not involve the use of new permanent sources of GHG emissions, such as gas-insulated equipment, generators, compressors, or other combustion stationary sources.

Impact GHG-1: Direct and Indirect GHG Emission Levels
LESS THAN SIGNIFICANT

Direct contributions of the proposed project to local and regional GHG emissions would primarily occur during the proposed 66-kV subtransmission line construction and reconductoring activities planned for year 2015 and associated with the temporary use of mobile sources and heavy duty diesel-fired equipment. As shown in Tables 4.7-6 and 4.7-7, direct GHG emissions from the proposed project-related activities would be well below the applicable thresholds of significance considered by local jurisdictions and would represent a small fraction of the local GHG emission inventories and targets for reduction.

Indirect emissions from the proposed project would be associated with electricity consumption at permanent project facilities. Since the Santa Clara, Casitas, and Carpinteria Substations are existing facilities currently operated by the applicant, and no additional permanent GHG-emitting equipment would be installed as part of the proposed project, indirect emissions from the project are considered not applicable.

Construction and operation and maintenance of the proposed project are relatively insignificant when compared to the viable standards. The proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; therefore, the impact is less than significant under this criterion.

Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.
LESS THAN SIGNIFICANT

As described in Section 4.7.2.3, all applicable jurisdictions for the proposed project have not officially adopted Climate Action Plans, policies, or regulations for the purpose of reducing GHG emissions from non-stationary sources. At the state level, a scoping plan, approved by CARB on December 12, 2008, provides the outline for actions to reduce California's GHG emissions. The scoping plan now requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHG emissions. The proposed project construction and operation would not conflict with any of the policies or GHG emission reduction measures outlined in the scoping plan. Although the operation of gas-insulated equipment is not being considered as part of the proposed project, the applicant is required to comply with state

regulations for reducing SF_6 emissions from gas-insulated switchgear (17 CCR Sections 95350 to 95359) at all facilities.

Construction, operation, and maintenance of each component of the proposed project would comply with all applicable regulations for the reduction of GHG. Construction, operation, and maintenance of the proposed project would not conflict with a federal, state, regional, or local plan, policy, or regulation for reducing GHG emissions; therefore, impacts under this criterion would be less than significant.

4.7.4 Mitigation Measures

There are no mitigation measures applicable to GHG.

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