

3.6 Greenhouse Gas Emissions

This section describes the Project's contribution towards global climate change (GCC) through the creation of greenhouse gas (GHG) emissions that would occur as a result of Project actions. GCC is expressed as changes in the average weather of the Earth, as measured by change in wind patterns, storms, precipitation, and temperature. Much scientific research has indicated that the human-related emissions of GHGs above natural levels are likely a significant contributor to GCC. Because the direct environmental effect of GHG emissions is the increase in average global temperatures, which in turn has numerous indirect effects on the environment and humans, the area of influence for GHG impacts associated with the Project would be global. However, those cumulative global impacts would be manifested as impacts on resources and ecosystems in California, as well as across the United States. Additionally, as this analysis concerns cumulative global impacts, there is no separate cumulative impacts analysis for GCC.

The following discussion addresses existing environmental conditions in the affected area, identifies and analyzes environmental impacts for a range of Project alternatives, and recommends measures to reduce or avoid adverse impacts anticipated from Project construction, operation, maintenance, and decommissioning. The applicable regulations are presented, and additional plans and policies are discussed including the State CEQA Guidelines and other relevant planning documents such as general plans, climate action plans, and GHG emissions reduction plans that are presented as applicable for this Project.

3.6.1 Environmental Setting

The environmental setting for climate change, including available estimates of State, federal, and international GHG emissions was determined through a review of existing literature from international and domestic resources, which included but were not limited to, the following:

- City of Hermosa Beach Existing Conditions Report,
- United States Geological Survey (USGS),
- National Oceanic and Atmospheric Administration (NOAA),
- National Aeronautics and Space Administration (NASA),
- The United States Environmental Protection Agency (USEPA),
- State of California, Air Resources Board (ARB),
- State of California, Energy Commission (CEC),
- State of California, Environmental Protection Agency (CalEPA),
- The Intergovernmental Panel on Climate Change (IPCC), and
- European Commission, Emission Database for Global Atmospheric Research (EDGAR).

Data obtained and presented are based on the latest available existing data from the above sources.

The Project site is located in Hermosa Beach, California, which is within the South Coast Air Basin and is under the local air quality jurisdiction of the South Coast Air Quality Management District (SCAQMD). The affected regulatory jurisdictions for climate change include local, State, and federal agencies. The regulatory setting for climate change was determined through a review of existing regulations, plans,

and standards from pertinent regulatory agencies. The applicable air quality regulations and policies are discussed in Section 3.6.2 (Regulatory Setting).

3.6.1.1 Setting

Climate Change

While climate change has been a concern since at least 1998, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), efforts devoted to GHG emissions reduction and climate change research and policy have increased dramatically in recent years. GCC refers to the impacts that occur from the accumulation of GHGs in the atmosphere combined with other sources of atmospheric warming. The accumulation of GHGs in the atmosphere regulates the Earth's temperature. Without these natural GHGs, the Earth's surface would be approximately 61°F cooler (CalEPA, 2006, p. 7); however, emissions from fossil fuel combustion for activities such as electricity production and vehicular transportation have elevated the concentration of GHGs in the atmosphere above natural levels. Scientific evidence indicates a trend of increasing global temperatures near the Earth's surface over the past century due to increased human-induced levels of GHGs. Worldwide over the past 132-year record, the 10 warmest years have all occurred since 1998, with the two hottest years on record being 2010 and 2005 (NASA, 2013). According to "The Future Is Now: An Update on Climate Change Science Impacts and Response Options for California," a California Energy Commission document, the American West is heating up faster than other regions of the United States (CEC, 2009, p. 9). The California Climate Change Center (CCCC) reports that, by the end of this century, average global surface temperatures could rise by 4.7°F to 10.5°F due to increased GHG emissions (CCCC, 2006a, p. 2).

According to NOAA, the atmospheric concentration of Carbon Dioxide (CO₂) measured at Mauna Loa, Hawaii in January 2015 was 399.96 parts per million (ppm) (NOAA, 2015) compared to the pre-industrial levels of 280 ppm +/- 20 ppm (IPCC, 2007a, Chapter 1 p. 100). NOAA's Mauna Loa data also show that the mean annual CO₂ concentration growth rate is accelerating, where in the 1960s it was about 0.9 ppm per year and in the first decade of the 2000s it was almost 2 ppm per year. The IPCC constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. It concluded that stabilization of GHGs below approximately 400 ppm carbon dioxide equivalent (CO₂e) concentration is required to keep long-term global mean warming less than a 3.6°F increase over pre-industrial levels, which is assumed to be necessary to avoid a large contribution to sea level rise from melting of the West Antarctic Ice Sheet (IPCC, 2007a, Chapter 10 pp. 828, 831).

The impact to climate change due to the increase in ambient concentrations of GHGs differ from criteria pollutants in that GHG emissions from a specific project do not cause direct adverse localized human health effects. Rather, the direct environmental effect of GHG emissions is the cumulative effect of an overall increase in global temperatures, which in turn has numerous indirect effects on the environment and humans. The impacts of climate change include potential physical, economic, and social effects. These effects could include: inundation of settled areas near the coast from rises in sea level associated with melting of land-based glacial ice sheets, exposure to more frequent and powerful climate events, changes in suitability of certain areas for agriculture, reduction in Arctic sea ice, thawing permafrost, later freezing and earlier breakup of ice on rivers and lakes, a lengthened growing season, shifts in plant and animal ranges, earlier spring events such as the flowering of trees, and a substantial reduction in winter snowpack (IPCC, 2007b).

Specifically, California could experience unprecedented heat, longer and more extreme heat waves, greater intensity and frequency of heat waves, and longer dry periods. More specifically, it is predicted that California could witness the following events by the end of the century: (CCCC, 2006a, p. 15)

- Temperature rises between 3 and 10.5°F,
- 6 to 30 inches or greater rise in sea level,
- 2 to 4 times as many heat-wave days in major urban centers,
- 2 to 6 times as many heat-related deaths in major urban centers,
- 1.5 to 2.5 times more critically dry years,
- 30 to 90 percent loss in Sierra snowpack,
- 25 to 85 percent increase in days conducive to ozone formation,
- 3 to 20 percent increase in electricity demand,
- 7 to 30 percent decrease in forest yields (pine), and
- 10 to 55 percent increase in the risk of wildfires.

Similar major changes to existing weather patterns and associated impacts could occur world-wide, but these climate changes will not always result in less rainfall or warmer temperatures. In some areas, rainfall would increase and average temperatures would drop. However, it is not specifically drought or increased temperatures that create the environmental, social, and economic impacts from climate change; rather, it is the significant change from existing weather patterns and conditions that causes these impacts.

Specific localized impacts of concern for the Hermosa Beach community, due to increases in sea level and any increases in storm intensities that may be a result of global warming, would be increased beach erosion and the potential for coastal property damage related to beach erosion and storm surges.

Greenhouse Gas Emissions

GHGs are gases that trap heat in the atmosphere and are emitted by natural processes and human activities. Examples of GHGs that are produced both by natural processes and industry include CO₂, Methane (CH₄), and Nitrous Oxide (N₂O). The State of California and the USEPA have identified six GHGs generated by human activity that are believed to be the primary contributors to man-made global warming: (1) CO₂, (2) CH₄, (3) N₂O, (4) hydrofluorocarbons (HFCs), (5) perfluorocarbons (PFCs), and (6) sulfur hexafluoride (SF₆).

- Carbon Dioxide (CO₂): CO₂ enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and chemical reactions (e.g., the manufacture of cement). CO₂ is also removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the biological carbon cycle.
- Methane (CH₄): CH₄ is emitted during the production and transport of coal, natural gas, and oil. CH₄ emissions also result from livestock and agricultural practices and the decay of organic waste in municipal solid waste landfills.
- Nitrous Oxide (N₂O): N₂O is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

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- Fluorinated Gases: HFCs, PFCs, and SF₆ are synthetic, powerful climate-change gases that are emitted from a variety of industrial processes. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrochloro-fluorocarbons, and halons). These gases are typically emitted in smaller quantities, but because they are potent climate-change gases, they are sometimes referred to as high “Global Warming Potential” (GWP) gases.

GHGs have varying amounts of GWP, where the GWP is the ability of a gas or aerosol to trap heat in the atmosphere. By convention, CO₂ is assigned a GWP of 1. In comparison, SF₆ has a GWP of 22,800, which means that it has a global warming effect 22,800 times greater than CO₂ on an equal-mass basis (TCR, 2014). To account for their GWP, GHG emissions are often reported as CO₂ equivalent (CO₂e). The CO₂e for a source is calculated by multiplying each GHG emission by its GWP, and then adding the results together to produce a single, combined emission rate representing all GHGs.

GHG emissions in the U.S. and the State of California come mostly from energy use. Energy-related CO₂ emissions, resulting from fossil fuel exploration and use account for approximately three-quarters of the human-generated GHG emissions in the United States, primarily in the form of CO₂ emissions from burning fossil fuels. More than half the energy-related emissions within the United States come from large stationary sources, such as power plants; approximately a third comes from transportation; while agriculture and forestry, other land uses (residential and commercial) make up a majority of the remainder of sources (USEPA, 2014, p. ES-22). The United States and State of California emissions of GHGs in 1990 and later years are summarized in Table 3.6-1.

Inventory Sector ¹	1990	2005	2008	2009	2010	2011	2012
United States Emissions ²							
Electric Power Industry	1,866.1	2,445.7	2,401.8	2,187.0	2,302.5	2,200.9	2,064.9
Transportation	1,553.2	2,012.3	1,916.5	1,839.1	1,853.5	1,832.2	1,815.5
Industry	1,527.9	1,403.5	1,367.6	1,217.2	1,297.3	1,290.5	1,273.9
Agriculture	518.1	583.6	615.3	605.3	600.9	612.7	614.1
Commercial	385.3	370.4	379.2	381.9	376.6	378.4	353.2
Residential	345.4	371.3	365.4	357.9	359.9	353.9	322.0
U.S. Territories	33.7	58.2	49.8	47.9	58.0	57.9	57.9
United States Total	6,229.6	7,244.9	7,095.5	6,636.3	6,848.6	6,726.6	6,501.5
State of California Emissions ³							
Electricity Generation	110.6	108.2	120.4	101.6	90.5	88.3	95.3
Transportation	150.7	192.0	181.3	174.9	174.0	171.7	171.0
Industry	103.7	101.5	97.5	95.2	99.3	99.7	100.7
Commercial	14.4	16.6	18.5	19.8	21.1	21.8	22.0
Residential	29.7	30.2	31.2	31.0	32.2	33.0	31.6
Agriculture & Forestry	16.9	36.5	38.0	35.8	37.7	36.3	37.8
Not Specified	1.3	0.2	0.2	0.2	0.2	0.2	0.2
California Total	433.3	485.1	487.1	458.4	453.1	450.9	458.7

Source: USEPA, 2014 (p. ES-22); CARB, 2007, pp. 1-2 (for California 1990); CARB, 2014a, pp. 1-2.

Note(s):

1. Sectors are as provided in each of the references used, with the in-state and out-of-state electricity generation values totaled.
2. Does not include the emissions sinks presented in this reference.
3. Emissions are the non-excluded emissions totals, not including emissions sinks, provided in the first two pages of the respective references rounded to the nearest tenth of a million metric ton. 2012 data is not available for California.

For comparison with the emission data given above in Table 3.6-1, the estimated global emissions of CO₂e in 2010 are 50,911 million metric tons (EDGAR, 2015). This indicates that the United States, which has about 4.4 percent of the global population, emits roughly 13 percent of the total global GHG emissions. The State of California, which has approximately 0.55 percent of the global population, emits just less than 0.9 percent of the total global GHG emissions.

A critical interpretation of the data provided in Table 3.6-1, along with knowledge regarding other current events, regulatory actions, and population levels, provides several potential conclusions regarding the California and United States GHG emission trends, such as:

- After peaking earlier in the first decade of this millennium, emissions from electricity generation are dropping, which is likely due to both the increased use of natural gas, reduced reliance on coal, and the increase in renewable power (e.g., solar, wind, etc.).
- Transportation emissions are dropping, likely primarily due to the impact of increased vehicle fuel efficiency standards.
- Commercial and agricultural emissions are increasing along with the increase in population.
- GHG emissions can fluctuate from year to year, where such fluctuations may be based on economic conditions, severe weather conditions, or other factors that relate to fuel consumption and consumer habits.
- California has a significantly lower per capita GHG emissions footprint than the United States average (about 45 percent lower based on 2010 emissions and population).

GHG emissions for the Project would include both direct and indirect emissions that occur as a result of Project actions. Direct emissions from construction activities include GHG emissions generated from construction equipment and vehicles. Direct emissions from operation activities include a small amount of GHG emissions generated from O&M activities.

Indirect GHG emissions sources can take many forms depending on the type of project. For this project, the primary source of indirect GHG emissions is from electricity use. There would also be a small amount of indirect GHG emissions from Project water use.

3.6.2 Regulatory Setting

All levels of government have some responsibility for the protection of air quality, and each level (federal, State, and regional/local) has specific responsibilities relating to air quality regulation. The regulation of GHGs is a relatively new component of air quality. Several legislative actions have been adopted to regulate GHGs on a federal, State, and local level, as detailed in this section.

3.6.2.1 Federal

United States Environmental Protection Agency (USEPA)

On April 2, 2007, in *Massachusetts v. EPA*, 549 U.S. 497 (2007), the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act. In reaching its decision, the court also acknowledged that climate change results, in part, from anthropomorphic causes. The Supreme Court's ruling paved the way for the regulation of GHG emissions by USEPA under the CAA. The Court held that the USEPA must determine whether or not emissions of GHGs 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 USEPA is required

to follow the language of section 202(a) of the Clean Air Act. The Supreme Court decision resulted from a petition for rulemaking under section 202(a) filed by more than a dozen environmental, renewable energy, and other organizations.

On April 17, 2009, the Administrator of the USEPA signed proposed endangerment and cause or contribute findings for GHGs under Section 202(a) of the Clean Air Act. The USEPA held a 60-day public comment period, which ended June 23, 2009, and received over 380,000 public comments. These included both written comments as well as testimony at two public hearings in Arlington, Virginia, and Seattle, Washington. The USEPA carefully reviewed, considered, and incorporated public comments and has now issued these final Findings.

The USEPA found that the current and projected concentrations of the GHGs in the atmosphere threaten the public health and welfare of current and future generations. The USEPA also found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare under CAA section 202(a). These Findings were based on careful consideration of the full weight of scientific evidence and a thorough review of numerous public comments received on the Proposed Findings published April 24, 2009. These Findings became effective on January 14, 2010 (USEPA, 2009).

USEPA has enacted a number of GHG regulations, and other environmental regulations that will impact GHG emissions, including:

- Mandatory GHG Reporting,
- GHG Tailoring Rule for Prevention of Serious Deterioration (PSD) Permits,
- Carbon Pollution Standards for Power Plants,
- Oil and Natural Gas Air Pollution Standards,
- GHG Vehicle Emissions Standards,
- Corporate Average Fuel Economy Standards,
- Renewables Fuel Standard, and
- Geologic Sequestration of Carbon Dioxide, under the Safe Drinking Water Act. (USEPA, 2015a; USEPA, 2015b).

None of these federal regulations are specifically relevant to the construction or operation of the proposed Project; however, the vehicle and fuel-related standards would indirectly cause GHG emission reductions from the regulated vehicles used during construction and operation of the Project.

3.6.2.2 State

Climate change is a global phenomenon, and the regulatory background and scientific data are changing rapidly. In addition to the federal regulations and policies on climate change, several states, including California, are formally addressing climate change. As of 2013, California is one of 20 states that have set GHG emission targets (C2ES, 2013). Executive Order S-3-05 and AB 32, the California Global Warming Solutions Act of 2006, promulgated targets to achieve reductions in GHG to 1990 GHG levels by the year 2020. This target-setting approach allows progress to be made in addressing climate change, and is a forerunner to setting emission limits. The California Air Resources Board (ARB) is designated as the responsible State agency for traditional air quality regulations. In addition, AB 32 vested ARB with regulatory authority for GHGs.

There are a variety of statewide rules and regulations that have been implemented or are in development in California that mandate the quantification or reduction of GHGs, or plan for adaptation for expected climate change scenarios. The relevant State actions are discussed below.

Executive Order S-3-05

Executive Order S-3-05 was established by Governor Arnold Schwarzenegger in June 2005. Executive Order S-3-05 establishes the following statewide emission reduction targets through the year 2050:

- by 2010, reduce GHG emissions to 2000 levels;
- by 2020, reduce GHG emissions to 1990 levels; and
- by 2050, reduce GHG emissions to 80 percent below 1990 levels.

Executive Order S-3-05 also calls for the CalEPA to coordinate oversight in the efforts to meet these targets and to prepare biennial science reports on the potential impact of continued GCC on certain sectors of the California economy. The first of these reports, “Our Changing Climate: Assessing Risks to California”, and its supporting document “Scenarios of Climate Change in California: An Overview” were published by the California Climate Change Center in 2006 (CCCC, 2006a, CCCC 2006b). The Climate Action Team has prepared subsequent Executive Order S-3-05 mandated reports in 2007/2008, 2009, and 2010.

This Executive Order does not include any specific requirements that pertain to the Project. However, actions taken by the State to implement these goals may indirectly affect the Project, depending on the specific implementation measures that are developed.

Assembly Bill 32

In response to Executive Order S-3-05 (June 2005), which declared California’s particular vulnerability to climate change, the California Global Warming Solutions Act of 2006, Assembly Bill 32 (AB32), was signed into effect on September 27, 2006. In passing the bill, 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.” (California Health & Safety Code, Sec. 38500, Division 25.5, Part 1).

AB 32 was established to mandate the quantification and reduction of GHGs to 1990 levels by 2020, and is the first law to comprehensively limit GHG emissions at the State level. The law establishes periodic targets for reductions, and requires certain facilities to report emissions of GHGs annually. The bill also reserves the ability to reduce emissions targets lower than those proposed in certain sectors that contribute the most to emissions of GHGs, including transportation.

Additionally, the bill requires:

- GHG emission standards to be implemented by 2012; and

- CARB to develop an implementation program and adopt GHG control measures “to achieve the maximum technologically feasible and cost-effective GHG emission reductions from sources or categories of sources.” CARB issued a draft Climate Change Scoping Plan in December 2008.

The Assembly Bill 32 Scoping Plan contains the main strategies California will use to reduce the GHGs that cause climate change. The Scoping Plan includes recommendations for reducing GHG emissions from most sectors of the California economy. The scoping plan has a range of GHG reduction actions, which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 cost of implementation fee regulation to fund the program. These measures have been introduced through four workshops between November 30, 2007, and April 17, 2008. A draft scoping plan was released for public review and comment on June 26, 2008, followed by more workshops in July and August 2008. The proposed scoping plan was released on October 15, 2008, and approved at the Board hearing on December 12, 2008.

The draft of the First Update to the Scoping Plan was published in February 2014, followed by its accompanying Environmental Analysis (CEQA Equivalent Document) published in March 2014 and approved in June 2014 (CARB, 2014b).

California Renewable Portfolio Standard Program

Senate Bill (SB) 1078 established California’s Renewable Portfolio Standard (RPS) program in 2002. The RPS program requires electrical corporations and electric service providers to purchase a specified minimum percentage of electricity generated by eligible renewable energy resources. The bill requires the California Energy Commission to certify eligible renewable energy resources, to design and implement an accounting system to verify compliance with the RPS by retail sellers, and to allocate and award supplemental energy payments to cover above-market costs of renewable energy. Under SB 1078, each electrical corporation was required to increase its total procurement of eligible renewable energy resources by at least one percent per year so that 20 percent of its retail sales were procured from eligible renewable energy resources.

In 2006, SB 107 accelerated the RPS program by establishing a deadline of December 31, 2010, for achieving the goal of having 20 percent of total electricity sold to retail customers in California per year generated from eligible renewable energy resources.

The RPS goal was increased to 33 percent when Governor Schwarzenegger signed Executive Order S-14-08 in November 2008. Executive Order S-14-08 was later superseded by Executive Order S-21-09 on September 15, 2009. Executive Order S-21-09 directed the CARB to adopt regulations requiring 33 percent of electricity sold in the State come from renewable energy by 2020. On September 23, 2010, the CARB approved a Renewable Electricity Standard regulation.

The 33 percent RPS goal became law when SB X1-2 was signed into law by Governor Brown in April 2011. SB X1-2, which was codified into the California Public Resources Code (25740 through 25751) and Public Utilities Code (PUC 399.11 through 399.31), requires that all electricity retailers in the State meet a 33 percent RPS by the end of 2020, and also requires that they have met a 20 percent RPS by 2013, and will meet a 25 percent RPS by 2016.

In September 2015, the Governor signed SB 350 into law, which increases the RPS standard to 50 percent by the year 2030. SB 350 also requires energy efficiency in existing buildings to be increased by 50 percent by that same year.

This law does not specifically apply to the Project, but this law would reduce greenhouse gases from the electricity sector and so reduce the Project's indirect GHG emissions from electricity use.

California Senate Bill 97

Senate Bill 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. It directs the OPR 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 Resources Agency to certify and adopt the CEQA guidelines by January 1, 2010.

The OPR published a technical advisory on CEQA and Climate Change on June 19, 2008 (OPR, 2008). The guidance did not include a suggested threshold, but stated that the OPR has asked the ARB to, "recommend a method for setting thresholds which will encourage consistency and uniformity in the CEQA analysis of greenhouse gas emissions throughout the state." The OPR does recommend that CEQA analyses include the following components:

- Identify GHG Emissions,
- Determine Significance, and
- Mitigate Impacts.

On December 30, 2009, the California Natural Resources Agency adopted amendments to the CEQA Guidelines including GHG/Climate Change analysis guidelines. According to the California Natural Resources Agency, "due to the global nature of GHG emissions and their potential effects, GHG emissions will typically be addressed in a cumulative impacts analysis" (CNRA, 2009, p. 17). Two GHG CEQA checklist items were included as part of the Guideline amendment; they are discussed further in Section 3.6.3.2.

As discussed in Section 15064.4 of the CEQA Guidelines, the determination of the significance of GHG emissions calls for a careful judgment by the lead agency, consistent with the provisions in Section 15064. Section 15064.4 further provides that a lead agency should make a good-faith effort, to the extent possible, on scientific and factual data, to describe, calculate, or estimate the amount of GHG emissions resulting from a project.

A lead agency shall have discretion to determine, in the context of a particular project, whether to:

1. Use a model or methodology to quantify GHG emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model or methodology it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; and/or
2. Rely on a qualitative analysis or performance based standards.

Section 15064.4 also advises a lead agency to consider the following factors, among others, when assessing the significance of impacts from GHG emissions on the environment:

1. The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and

3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

Office of the California Attorney General

The Office of the California Attorney General maintains a website with a list of CEQA mitigations for GCC impacts (OAG, 2015). The Attorney General has listed some examples of types of mitigations that local agencies may consider to offset or reduce GCC impacts from a project. The Attorney General ensures that the presented lists are examples that are not intended to be exhaustive and provide measures and policies that could be undertaken. Moreover, the measures cited may not be appropriate for every project, so the Attorney General recommends that the lead agency use its own informed judgment in deciding which measures it would analyze, and which measures it would require for a given project.

The references, provided by the Attorney General's website, list energy efficiency measures that could be undertaken or funded by a diverse range of projects, including: renewable energy, water conservation and efficiency, solid waste measures, land use measures, transportation and motor vehicles, and carbon offsets (OPR, 2008; CAPCOA, 2009). However, most of the listed measures would not be applicable to the proposed Project because they are more appropriate as measures to reduce long-term operational GHG emissions. However, these and other potential CEQA GHG emissions reduction measures listed by state agencies will be evaluated for applicability.

3.6.2.3 Local

Many local air pollution control agencies in California have proposed numerical or other GHG significance criteria. The SCAQMD, which has local regulatory authority over the air pollutant emissions, has established a recommended CEQA-significant emissions level (10,000 tons CO₂e per year) for addressing GHG emissions (SCAQMD, 2015a). However, the SCAQMD does not currently have any additional CEQA guidelines related to assessing GCC impacts or have current or proposed new specific local regulations related to GHG emissions that would be applicable to the Project (SCAQMD, 2015b; SCAQMD, 2015c). However, SCAQMD does point to the California Air Pollution Control Officers Association's (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures document for guidance on their CEQA Analysis Handbook webpage (CAPCOA, 2010). In addition, the CAPCOA has also prepared the Model Policies for Greenhouse Gases in the General Plans document (CAPCOA, 2009) that provides additional policies that may be relevant to the construction or operation of the Project.

Additionally, there are many jurisdictions (city and county) within California that have adopted climate change plans. The City of Hermosa Beach, the only other appropriate local jurisdiction for this Project, is currently working on a Climate Action Plan but that plan has not yet been completed or approved. The City has a Carbon Neutral Initiative and has prepared a Carbon Neutral Scoping Plan (City of Hermosa Beach, 2013), but the scoping plan does not include specific requirements for GHG emissions reduction measures for private projects.

The relevant local planning document strategies, and conformance with those strategies, are provided in Section 3.6.3.

3.6.3 Impact Analysis

This section evaluates greenhouse gas emissions impacts associated with the construction and operation of the proposed Project. This includes the evaluation of the greenhouse gas emissions related to the marine cable laying activities and the onshore construction activities. The proposed Project's construction and operation GHG emissions are evaluated quantitatively based on the potential for those emissions to exceed the numeric emissions significance threshold identified below, where construction emissions are amortized over the life of the project. This quantitative impact analysis includes the evaluation of marine vessel greenhouse emissions out to 40 nautical miles (NM) from shore. The second non-numeric significance threshold has been evaluated qualitatively.

3.6.3.1 Methodology/Approach

The greenhouse gas emissions impact analysis considers the proposed Project's emissions estimate provided by the applicant (ICF, 2015a), which was reviewed and then modified by the applicant to address completeness, accuracy, and other adequacy issues discovered during the review (ICF, 2015b). The revised applicant greenhouse gas emissions estimate is generally considered adequate. The final corrected version of the greenhouse gas emissions estimate for the project is provided in Appendix B (Air Quality and Greenhouse Gas Calculations). Appendix B identifies the greenhouse gas emissions estimate assumptions and the emission factor sources used in the estimate. Greenhouse gas emissions factor sources used in this analysis are from USEPA and from CARB for the proposed Project's marine vessel and onshore construction emissions sources and onshore operation emission sources.

3.6.3.2 Significance Thresholds

A Greenhouse Gas Emissions impact would be considered significant if the proposed Project would:

- Result in greenhouse gas emissions exceeding SCAQMD significance threshold of 10,000 MT/yr CO₂e. (SCAQMD, 2015a) Construction emissions are amortized over the project's life per SCAQMD guidance (SCAQMD, 2008).
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

3.6.3.3 Impacts and Mitigation Measures

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Impact GHG-1: The Project would directly and indirectly generate GHG emissions during construction and operation.

The project's direct, and indirect electricity use emissions during operation, were calculated and those calculations and the assumptions used in those calculations are provided in Appendix B. The project's total greenhouse gas emissions estimates includes all four phases of construction, including the main lay vessel emissions out to 40 nautical miles (nm) from shore, for comparison with the SCAQMD significance threshold. A summary of the results of the GHG emissions calculations, compared to the SCAQMD GHG emissions significance threshold, is provided below in Table 3.6-2.

The worst-case, non-routine maintenance event is assumed to be marine cable repair. Such an event, which is not anticipated but that could occur, has estimated GHG emissions of approximately 100 metric tons of CO₂e. Even if this unanticipated worst-case event were to happen annually it would not

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increase GHG emissions above the SCAQMD emissions significance threshold or otherwise affect the GHG emissions impact determination.

Emissions Source	GHG Emissions (Metric Tons CO ₂ e)
Total Construction Emissions ¹	4,324
Annualized Construction Emissions ²	173
Total Routine Operations Emissions	112
Total Annualized Emissions	295
SCAQMD Significance Threshold	10,000
Exceeds Threshold	NO

Source: Appendix B; SCAQMD, 2015a.

- 1 – These emissions include emission out to 40 nm from shore, assuming a linear emissions rate for the emissions determined for 24 to 100 nm from shore.
- 2 – This represents the total construction emissions amortized over the Project life (25 year operational life of the cables, which in this case is 4,324 MT CO₂e/25 years = 173 MT CO₂e Project life annualized emission rate). Construction emissions amortization is completed to determine the Project’s total annualized GHG emissions rate to compare with the SCAQMD threshold per SCAQMD guidance (SCAQMD, 2008).

The proposed Project’s annual greenhouse emissions, as shown above in Table 3.6-2, are well below the SCAQMD significance thresholds. Therefore, the proposed Project’s greenhouse gas emissions impacts would not be significant (Class III).

Greenhouse Gas Emissions Regulatory Compliance

As noted in Section 3.6.2, there are no federal, State, or local climate change or GHG emissions regulations that directly affect the Project’s construction or operation. However, there are a number of federal, State, and local plans and policies, and GHG emissions reduction strategies that are potentially applicable to the Project, either directly or indirectly. A summary of the compliance with all potentially applicable GHG plans, policies, and regulations is provided in Table 3.6-3.

Adopted Plan, Policy, or Regulation	Consistency Determination	Proposed Project Consistency
Federal		
40 CFR Part 98. Mandatory Reporting of Greenhouse Gases Rule	Not Applicable	The Project would not have emissions sources that would be subject to this regulation.
40 CFR Part 52. Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule	Not Applicable	The Project would not have emissions sources that would be subject to this regulation.
State		
AB 32. Annual GHG Emissions Reporting	Not Applicable	The Project does not include emissions sources that would be subject to this regulation.
AB 32. Cap-and-Trade	Not Applicable	The Project does not include emissions sources that would be subject to this regulation.
Local		
City of Hermosa Beach – Carbon Neutral Initiative	Not Applicable	This City initiative and related Carbon Neutral Scoping Plan do not include specific requirements that apply to private projects.

Table 3.6-4 identifies current California emission reduction strategies to reduce GHGs, identifies the applicability of each strategy, and the Project design feature or mitigation measure that is proposed to comply with the applicable strategies.

Table 3.6-4. California GHG Reduction Strategies	
Strategy	Project Design/Mitigation to Comply with Strategy
Vehicle Climate Change Standards: AB 1493 (Pavley) required the State to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by CARB in September 2004.	These are CARB enforced standards; vehicles that access the proposed Project during construction and operation are required to comply with the standards addressed under these strategies.
Other Light Duty Vehicle Technology: New standards would be adopted to phase in beginning in the 2017 model.	
Heavy-Duty Vehicle Emission Reduction Measures: Increased efficiency in the design of heavy-duty vehicles and an education program for the heavy-duty vehicle sector.	
Diesel Anti-Idling: In July 2004, CARB adopted a measure to limit diesel-fueled commercial motor vehicle idling.	
Achieve 50% Statewide Recycling Goal: Achieving the State's 50% waste diversion mandate as established by the Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989), will reduce climate change emissions associated with energy intensive material extraction and production as well as methane emission from landfills. A diversion rate of 48% has been achieved on a statewide basis. Therefore, a 2% additional reduction is needed.	The proposed Project would comply with these strategies by shipping recyclable waste, such as concrete or asphalt wastes, to appropriate locations.
Zero Waste - High Recycling: Additional recycling beyond the State's 50 percent (50%) recycling goal.	
Shore Power: Ocean going vessels would reduce use of auxiliary engines when docked at berth by connecting to grid supplied power.	This project does not include regular berthing of the project's ocean going vessel (main lay vessel). Berthing will only occur once for each transpacific cable landing. This measure is more applicable to vessels regularly berthing at the same berth.
Building Energy Efficiency Standards in Place and in Progress: Public Resources Code 25402 authorizes the California Energy Commission to adopt and periodically update its building energy efficiency standards (that apply to newly constructed buildings and additions to and alterations to existing buildings).	Not applicable as no new buildings are proposed.
Green Buildings Initiative: Green Building Executive Order, S-20-04 (CA 2005), sets a goal of reducing energy use in public and private buildings by 20 percent (20%) by the year 2015, as compared with 2003 levels.	Not Applicable

Source: OPR, 2008; CAPCOA, 2009

In addition to the measures listed above, several air quality emissions reductions measures that would be required for the proposed Project will also reduce GHG emissions, including the applicant proposed measure for main lay vessel transit speed reduction and air quality Mitigation Measure AQ-1 that would require the support vessels to reduce vessel speeds when operating within 3 miles of shore within Hermosa Beach's extended border and to have the support vessels berth at King's Harbor to reduce transit distances, which together would reduce GHG emissions from the support vessels substantially.

In summary, the Project would conform to State and local GHG emissions/climate change regulations and policies/strategies.

3.6.3.4 Cumulative Effects

GHG emissions impacts are analyzed as a global cumulative impact, so additional separate cumulative impacts analyses was not performed.

3.6.3.5 Summary of Impacts, Mitigation Measures, and Significance Conclusions

No significant impacts related to greenhouse gas emissions have been identified based on the thresholds of significance listed in Section 3.6.3.2.