Section 3.4
Climate Change

This section discusses the Project's potential impacts relating to climate change and an evaluation of the significance of potential impacts. A summary of impacts and mitigation measures for impacts relating to climate change is presented in **Table 3.4-1**.

It is important to note that increasing greenhouse gas (GHG) emissions is, by its nature, a cumulative impact concern. There are billions of sources of individual anthropogenic (i.e., human created or caused) GHG emissions that are presently contributing to increased concentrations of GHGs in the atmosphere. This cumulative increase in atmospheric concentrations of carbon dioxide (CO_2) and other GHGs due to human-made emissions has been found by the majority of scientific research to be currently resulting in increasing temperatures globally and associated climate change.

Given the scale of the planet's atmosphere, an individual project's GHG emissions cannot change the atmospheric concentrations of GHGs in any meaningful way, when considered in complete isolation from all other existing and future GHG emissions. However, the aggregation of cumulative existing and future sources of emissions, including a project's emissions, is significant based on the projections of current climate change research. Consequently, the focus of this section is to evaluate whether the Project's GHG emissions would contribute considerably to the significant cumulative impact of climate change.

This section also analyzes whether there are expected impacts on the Project due to localized effects of future climate change, such as sea level rise.

The following key sources of data and information were used in the preparation of this section.

- 2005 Draft Unincorporated Monterey County Greenhouse Gas Emissions Inventory (AMBAG 2010).
- 2010 Monterey County General Plan Final EIR (Monterey County 2010).
- CEQA Air Quality Guidelines (Monterey Bay Unified Air Pollution Control District 2008).
- Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks from Climate Change in California (California Energy Commission 2012).
- Climate Change 2014: Synthesis Report (Intergovernmental Panel on Climate Change 2013).

Table 3.4-1. Summary of Project Impacts on Climate Change

Impact	Significance Before Mitigation	Mitigation	Significance After Mitigation
A. Contribute to Climate Change Impacts			
CC-A1. The Project would result in project-related greenhouse gas emissions, during construction and from operation that would contribute to climate change impacts and be inconsistent with the goals of Assembly Bill 32.	Significant	CC-A1. Implement best management practices for GHG emissions during construction. CC-A2a. Reduce annual greenhouse gas emission by 24% relative to business as usual using a combination of design features, replanting, and/or offset purchases CC-A2b: Validate the greenhouse gas emission offset value of preserving Monterey pine forest on the Old Capitol Site using the Climate Action Registry Forest Project Protocol and preserve the lands in perpetuity.	Less than Significant
B. Effects of Climate Change			
CC-B1. The Project would not result in significant exposure of persons or property to reasonably foreseeable impacts of climate change.	Less than Significant	None required	--

-- = Not applicable

Regulatory Setting

This section describes federal, state, and local plans, policies, and laws that are relevant to climate change for the Project.

Federal

Although climate change and GHG reductions are concerns at the federal level, no comprehensive federal legislation or regulations have been enacted related to GHG emissions reductions and climate change specifically. Foremost among past developments have been the U.S. Supreme Court's decision in *Massachusetts et al. v. U.S. Environmental Protection Agency*, the "Endangerment Finding," and the "Cause or Contribute Finding," which are described below. Despite these findings, the future of GHG regulation at the federal level remains uncertain and continues to evolve. Recent activity includes proposed standards for CO_2 emissions from new fossil fuel–fired electricity power plants

by the U.S. Environmental Protection Agency (EPA). EPA and President Obama's Climate Action Plan, which provides a plan to reduce GHG emissions in the United States by 26% to 28% percent below 2005 levels by 2025. Additionally, the EPA proposed a Clean Power Plan in 2014, which would be the first to establish national GHG limits for the electric power industry.

Massachusetts et al v. Environmental Protection Agency (2007)

In *Massachusetts et al. v. Environmental Protection Agency* 549 U.S. 497 (2007), the U.S. Supreme Court held that GHG emissions are pollutants within the meaning of the Clean Air Act (CAA). In issuing the opinion, the court also acknowledged that climate change results, in part, from anthropogenic causes. The Supreme Court's opinion in this case allowed the EPA to regulate GHG emissions.

U.S. Environmental Protection Agency Endangerment Finding and Cause or Contribute Finding (2009)

On December 7, 2009, the EPA signed the Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the CAA.

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

Although EPA has yet to issue specific regulations regulating GHG emissions, the EPA Administrator's findings were the first step toward future regulations that are currently under development.

Corporate Average Fuel Economy Standards (2010/2011)

The current Corporate Average Fuel Economy (CAFE) standards for vehicles, which went into effect in 2012, incorporate stricter fuel economy standards into one uniform federal standard. The standards are equivalent to those previously promulgated by the State of California (see the Assembly Bill 1493 discussion below). The changes are expected to reduce GHG emissions from new vehicles by roughly 25 percent, relative to business-as-usual (BAU) conditions, by 2016.

In October 2012, the EPA and the National Highway Traffic Safety Administration (NHTSA) established the final rule for fleet-wide passenger car and light-truck model years 2017 to 2025. The new CAFE standards aim to reach an emissions rating of 163 grams of carbon monoxide (CO) per mile, or the equivalent of 54.5 miles per gallon (mpg), by model year 2025. Fleet-wide fuel economy standards will become more stringent with each subsequent model year through 2025. Because of a statutory requirement that requires NHTSA to set average fuel economy standards five model years at a time, NHTSA requires model years 2017 to 2022 to have an industry fleet-wide average of 40.3 to 41.0 mpg and estimates that 2025 model year vehicles will range from 48.7 to 49.7 mpg (U.S. Environmental Protection Agency 2012).

State

California has adopted statewide legislation to address issues related to various aspects of climate change and GHG emissions mitigation. Much of this establishes a broad framework for the state's long-term GHG emissions-reduction and climate change adaptation program. The governor of California has also issued several executive orders related to the state's evolving climate change policy. Of particular importance to local governments is the direction provided by the 2008 Assembly Bill (AB) 32 Scoping Plan, which recommends that local governments should reduce their GHG emissions to a level consistent with state goals (i.e., 15% below current levels).

In the absence of federal regulations, GHG emissions are generally regulated at the state level and typically approached by setting emissions-reduction targets for existing sources of GHG emissions, establishing policies to promote renewable energy and increase energy efficiency, and developing statewide action plans. Summaries of key policies, legal cases, regulations, and legislation at the state level relevant to the County are provided below. Key statewide GHG regulations that are directly applicable to the Project are also included below.

Assembly Bill 1493—Pavley Rules (2002, amendments 2009)/Advanced Clean Cars (2011)

AB 1493 required the ARB to develop and implement regulations to reduce automobile and light-truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009 model year. In June 2009, the EPA administrator granted a CAA waiver of preemption to California. This waiver allowed California to implement its own GHG emissions standards for motor vehicles beginning with model year 2009. ARB approved joint rulemaking efforts to reduce GHG emissions from passenger cars (model years 2017 to 2025) on December 31, 2012 (Air Resources Board 2014).

Renewable Energy Standard/Renewable Portfolio Standard (2002/2006/2011)

Senate Bill (SB) 1078 (2002) and SB 107 (2006) created the Renewable Energy Standard (RES), which required electric utility companies to increase procurements from eligible renewable energy resources by at least 1% of their retail sales annually until reaching 20% by 2010. SB 2X 1 (2011) requires a Renewable Portfolio Standard (RPS), functionally the same thing as the RES, of 33% by 2020. In 2012, the statewide average for the three largest electrical suppliers (Pacific Gas and Electric, Southern California Edison, and San Diego Gas & Electric) was 19.89%.

Assembly Bill 32—The Global Warming Solutions Act of 2006/2011 Update

AB 32 codified the state's GHG emissions target by requiring California's global warming emissions to be reduced to 1990 levels by 2020. Since being adopted, the ARB, the California Energy Commission, the California Public Utilities Commission, and the California Building Standards Commission have been developing regulations that will help the state meet the goals of AB 32 and Executive Order (EO) S-03-05. The scoping plan for AB 32 identifies specific measures to reduce GHG emissions to 1990 levels by 2020 and requires ARB and other state agencies to develop and enforce regulations and other initiatives to reduce GHG emissions. Specifically, the scoping plan articulates a key role for local governments by recommending that they establish GHG emissions-reduction goals for both their municipal operations and the community that are consistent with those of the state (i.e., approximately 15% below current levels) (Air Resources Board 2008).

The ARB re-evaluated its emissions forecast in light of the economic downturn and updated the projected 2020 emissions to 545 million metric tons of carbon dioxide equivalent ($MMTCO_2e$). Two reduction measures (Pavley I and RPS [12% to 20%]) that were not previously included in the 2008 scoping plan baseline were incorporated into the updated baseline, further reducing the 2020 statewide emissions projection to 507 $MMTCO_2e$. The updated forecast of 507 $MMTCO_2e$ is referred to as the AB 32 2020 baseline. An estimated reduction of 80 $MMTCO_2e$ is necessary to lower statewide emissions to the AB 32 target of 427 $MMTCO_2e$ by 2020 (Air Resources Board 2011).

ARB approved the *First Update to the Scoping* Plan on May 22, 2014, and finalized the environmental analysis following public review on May 15, 2014 (Air Resources Board 2014). The first update includes both a 2020 element and a post-2020 element. The 2020 element focuses on the state, regional, and local initiatives that are being implemented now to help the state meet the 2020 goal. The post-2020 element provides a high-level view of the long-term strategy for meeting the 2050 GHG goals, consistent with the goals set forth in EO S-3-05 and EO B-16-2012.

Executive Order S-03-05 (2005) and Executive Order B-16-2012 (2012)

EO S-03-05 is designed to reduce California's GHG emissions to (1) 2000 levels by 2010, (2) 1990 levels by 2020, and (3) 80% below 1990 levels by 2050. EO B-16-2012 establishes benchmarks for reducing transportation-related GHG emissions. It requires agencies to implement the Plug-in Electric Vehicle Collaborative and California Fuel Cell Partnership by 2015 and sets forth targets specific to the transportation section, including the goal of reducing transportation-related GHG emissions to 80% less than 1990 levels.

Executive Order S-01-07, Low-Carbon Fuel Standard (2007)

Governor Arnold Schwarzenegger set forth the low-carbon fuel standard (LCFS) for California. Under this executive order, the carbon intensity of California's transportation fuels is to be reduced by at least 10% by 2020. On July 15, 2013, the Fifth District Court of Appeals ruled to allow LCFS regulations to remain operative while ARB analyzes the smog-related impacts of LCFS implementation, including formulation of appropriate enforceable mitigation measures, and subsequently completes a full CEQA review, provided ARB attempts to meet its statutory requirements in good faith (see *Poet, LLC et al. v. California Air Resources Board* et al.). The CEQA process is currently under way. Additionally, on September 18, 2013, the Ninth Circuit Court of Appeals denied a petition for review *in Rocky Mountain Farmers Union v. Corey,* lending finality to the Ninth Circuit Court's decision that the LCFS does not facially violate the dormant Commerce Clause, which most likely removes the most substantial hurdle to the LCFS's constitutional validity under the dormant Commerce Clause (California Environmental Law Blog 2014).

Senate Bill 375, Statutes of 2008

SB 375 requires metropolitan planning organizations to incorporate a "sustainable communities strategy" (SCS) in their regional transportation plans that will achieve the GHG emissions-reduction targets set by the ARB. In February 2011, the ARB finalized the regional targets. SB 375 also includes provisions for streamlined CEQA review for some infill projects, such as transit-oriented development.

AMBAG is the Metropolitan Planning Organization for the Monterey Bay Area and they adopted their Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) in compliance with SB

375 in June 2014. The RTP/SCS calls for GHG emissions associated with the passenger and light-duty sector that match 2005 per capita levels in 2020 and that are 5% below 2005 per capita levels by 2035.

State CEQA Guidelines (2011)

The 2011 State CEQA Guidelines include a new section (Section 15064.4) that specifically discusses the significance of GHG emissions. Section 15064.4 calls for a good-faith effort when describing, calculating, or estimating GHG emissions. Section 15064.4 also states that a determination of the significance of GHG impacts should consider whether the project would increase or reduce GHG emissions, exceed a locally applicable threshold of significance, or comply with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. The revisions also state that a project may be found to have a less-than-significant impact if it complies with an adopted plan that includes specific measures to reduce GHG emissions sufficiently (Section 15064(h)(3)). However, the revised guidelines do not require or recommend a specific analysis methodology or provide quantitative criteria for determining the significance of GHG emissions.

Cap and Trade (2012)

On October 20, 2011, ARB adopted the final cap-and-trade program for California. The California cap-and-trade program is a market-based system with an overall emissions limit for affected sectors. Examples of affected entities include carbon dioxide suppliers, in-state electricity-generators, hydrogen production, petroleum refining, and other large-scale manufacturers and fuel suppliers. The cap-and-trade program is currently regulating more than 85% of California's emissions. Compliance requirements began according to the following schedule: (1) electricity generation and large industrial sources (2012); (2) fuel combustion and transportation (2015).

Local

Monterey Bay Unified Air Pollution Control District

As discussed in Section 3.2, *Air Quality*, Monterey Bay Unified Air Pollution Control District (MBUAPCD) has primary responsibility for development and implementation of rules and regulations to attain the national ambient air quality standards and California ambient air quality standards, permitting new or modified sources, developing air quality management plans, and adopting and enforcing air pollution regulations for all projects in Monterey County.

The AB 32 Scoping Plan does not provide an explicit role for local air districts with respect to implementing AB 32, but it does state that ARB will work actively with air districts in coordinating emissions reporting, encouraging and coordinating GHG reductions, and providing technical assistance in quantifying reductions. The ability of air districts to control emissions (both criteria pollutants and GHGs) is provided primarily through permitting, but also through their role as a CEQA lead or commenting agency, the establishment of CEQA thresholds, and the development of analytical requirements for CEQA documents (Monterey Bay Unified Air Pollution Control District 2008).

The MBUAPCD drafted potential quantitative thresholds for projects undergoing CEQA review in February 2014. The draft thresholds include a 10,000 metric ton (MT) threshold for stationary

sources and a tiered approach for land use projects, whereby one of the following is applied: a bright-line (numeric) of 2,000 MT; incorporation of mitigation measures to achieve 16% reduction from BAU; or compliance with an adopted climate action plan (Monterey Bay Unified Air Pollution Control District 2014). However, the MBUAPCD has not formally adopted these thresholds, and they remain in draft form. Additional consultation with MBUAPCD staff indicates use of these draft thresholds would be inappropriate for use in determining significance (Clymo pers. comm.). MBUAPCD staff had suggested potential use of the CEQA thresholds adopted by the San Luis Obispo Air Pollution Control District (SLOAPCD). However, the SLOAPCD's thresholds were specifically developed in the context of San Luis Obispo County, not Monterey County, and thus use of their thresholds is not necessarily appropriate within Monterey County. Instead, as explained below, this EIR uses a different threshold that is related to Monterey County's GHG inventory and forecast that is consistent with the approach used in the prior EIR for the Pebble Beach Company's buildout project.

2010 Monterey County General Plan

The 2010 Monterey County General Plan, adopted in October 2010, applies to the inland area of Monterey County, including the Project site. The 2010 Monterey County General Plan presents goals and policies that guide the general distribution and intensity of land uses, including residential, agricultural, commercial and industrial, public facilities, and open space uses, in the County. The County has developed a climate action plan for its municipal government operations but is still working on the draft GHG reduction plan for the community as a whole.

Conservation and Open Space Element

The following two policies from the General Plan's Conservation and Open Space Element concern GHG reduction.

> **Policy OS-10.11.** Monterey County shall develop and adopt a GHG Reduction Plan with a target to reduce emissions by 2020 to a level that is 15% less than 2005 emission levels.

> **Policy OS-10.12.** The County shall adopt a Green Building Ordinance to require green building practices and materials for new civic buildings and new private residential, commercial and industrial buildings

Environmental Setting

The following considerations are relevant to the discussion and analysis of GHG emissions and climate change in the Project vicinity.

Background Information

Greenhouse Gas and Climate Change

According to the EPA, a GHG is any gas that absorbs infrared radiation in the atmosphere. This absorption traps heat within the atmosphere, maintaining the earth's surface temperature at a level higher than would be the case in the absence of GHGs. GHGs include water vapor, CO_2, CH_4, N_2O, O_3, PFCs, HFCs, and halogenated chlorofluorocarbons. Naturally occurring GHGs include water vapor, CO_2, CH_4, N_2O, and O_3. Human activities add to the levels of most of these naturally occurring gases.

Increasing levels of GHGs in the atmosphere result in an increase in the temperature of the earth's lower atmosphere, a phenomenon that is commonly referred to as "global warming." Warming of the earth's lower atmosphere induces a suite of additional changes, including changes in global precipitation patterns; ocean circulation, temperature, and acidity; global mean sea level; species distribution and diversity; and the timing of biological processes. These large-scale changes are collectively referred to as "global climate change."

The Intergovernmental Panel on Climate Change (IPCC) has been established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change and its potential impacts and provide options for adaptation and mitigation. As the leading authority on climate change science, IPCC's best estimates are that average global temperature rise between 2000 and 2100 could range from 0.5°F to 8.6°F (Intergovernmental Panel on Climate Change 2013). Large increases in global temperatures, as high as 8.6°F, could have massive deleterious impacts on natural and human environments.

Since the industrial revolution began in approximately 1750, the concentration of CO_2 in the earth's atmosphere has increased from 270 parts per million (ppm) to roughly 391 ppm. Atmospheric concentrations of CH_4 and N_2O have similarly increased since the beginning of the industrial age. Since 1880, the global average surface temperature has increased by 1.5°F, global average sea level has risen by nearly 190 millimeters (since 1901), and northern hemisphere snow cover (data available since 1920) has decreased by nearly 3 million square kilometers. These recently recorded changes can be attributed with a high degree of certainty to increased concentrations of GHGs in the atmosphere (Intergovernmental Panel on Climate Change 2013). Sinks of CO_2 (which remove rather than emit CO_2) include uptake by vegetation and dissolution into the ocean. Global GHG emissions greatly exceed the removal capacity of natural sinks. As a result, concentrations of GHGs in the atmosphere are increasing (California Energy Commission 2006).

GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants (TACs). Criteria air pollutants and TACs occur locally or regionally, and local concentrations respond to locally implemented control measures. The long atmospheric lifetimes of GHGs allow them to be transported great distances from sources and become well mixed, unlike criteria air pollutants, which typically exhibit strong concentration gradients away from point sources. GHGs and global climate change represent cumulative impacts. GHG emissions contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change.

Principal Greenhouse Gases

The GHGs listed by the IPCC include CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6 (Intergovernmental Panel on Climate Change 2013). California law and the State CEQA Guidelines contain a similar definition of GHGs (Health and Safety Code Section 38505(g); 14 California Code of Regulations Section 15364.5). Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh its anthropogenic (human-made) sources.[1] The sources and sinks[2] of

[1] Although water vapor plays a substantive role in the natural greenhouse effect, the change in GHGs in the atmosphere due to anthropogenic actions is enough to upset the radiative balance of the atmosphere and result in global warming.

[2] A sink removes and stores GHGs in another form. For example, vegetation is a sink because it removes atmospheric CO_2 during respiration and stores the gas as a chemical compound in its tissues.

each of these gases are discussed in detail below. Generally, GHG emissions are quantified and presented in terms of metric tons of carbon dioxide equivalent (CO_2e) emitted per year.

The primary GHGs associated with the Project are CO_2, CH_4, and N_2O. HFCs, PFCs, and SF_6 and are associated primarily with industrial processes and, thus, are not discussed herein.

To simplify reporting and analysis, GHGs are commonly defined in terms of a global warming potential (GWP). The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO_2e. The GWP of CO_2 is, by definition, 1. The GWP values used in this report are based on the IPCC Fifth Assessment Report (AR5) and United Nations Framework Convention on Climate Change (UNFCCC) reporting guidelines and defined in **Table 3.4-2** (Intergovernmental Panel on Climate Change 2013). The AR5 GWP values are used in ARB's California inventory and AB 32 Scoping Plan estimate update (Air Resources Board 2014).

Table 3.4-2. Lifetime, Global Warming Potential, and Abundance of Key Greenhouse Gas Emissions

Gas	Global Warming Potential (100 years)	Lifetime (years)[a]	2014 Atmospheric Abundance
CO_2 (ppm)	1	50–200	394
CH_4 (ppb)	28	9–15	1,893
N_2O (ppb)	265	121	326

Notes:
Sources: Myhre et al. 2013; Air Resources Board 2014.
[a] Defined as the half-life of the gas.
CO_2 = carbon dioxide.
CH_4 = methane.
N_2O = nitrous oxide.
ppm = parts per million.
ppb = parts per billion.

Climate Change in California and Monterey County

Climate change is a complex phenomenon that has the potential to alter local climatic patterns and meteorology. Even with the efforts of jurisdictions throughout the state, a certain amount of climate change is inevitable due to existing and unavoidable future GHG emissions worldwide.

Climate change effects in California include, but are not limited to, sea level rise, extreme heat events, increase in infectious diseases and respiratory illnesses, and reduced snowpack and water supplies.

With respect to the greater Monterey County area, including the Project site, climate change effects are expected to result in the following conditions.

- A hotter climate, with average annual temperatures increasing by 2.9-4.9° Fahrenheit (F) in Monterey County by 2090, relative to baseline conditions (1961–1990) (California Energy Commission 2014).
- Increased sea level rise risk, with acreage vulnerable to a 100-year flood event increasing by 11% in Monterey County by 2100 (California Energy Commission 2014).

- More frequent and intense wildfires, with the area burned projected to increase by an estimated 10–15% in Monterey County by 2050 and 19–28% by 2100 (California Energy Commission 2014).
- Changes in growing season conditions and species distribution (PRBO Conservation Science 2011).
- Increased heat and decreased air quality, with the result that public health will be placed at risk, and native plant and animal species may be lost (PRBO Conservation Science 2011).

Baseline Emissions at Development Site

The 13.2-acre Project site is undeveloped, forested open space. **Table 3.4-3** presents GHG emissions associated with the existing tree stock and carbon sequestration, based on current land use coverage, at the 2.7-acre Project development site.

It is assumed that, other than existing tree stock and carbon sequestration,[3] operational baseline emissions at the Project site are zero.

Table 3.4-3. Existing Carbon Tree Stock and Carbon Sequestration[a] in Current Land Use Coverage at Project Development Site

Development Site (2.7 acres)	Existing Tree Stock (MT CO_2)	Carbon Sequestration (MT CO_2)
Monterey pine trees[b]	299.7	86.13
Oak trees[b]		433.06
Total (MT)	**299.7**	**519.19**
Annualized (MT/year)[c]	10.0	17.3

Notes:
Carbon Stock and Sequestration Factors: ICF Calculations using CalEEMod (**Appendix D**).
[a] Carbon emissions are sequestered by biological, chemical, or physical processes that embed the carbon in structures that hold the emissions and keep them out of the atmosphere.
[b] The Project would remove a total of 725 trees—590 coast live oak trees and 135 Monterey pine trees (see **Appendix B**, Tree Resource Assessment/Arborist Report).
[c] Pursuant to CalEEMod Guidance, carbon stock and sequestration totals shown in the annual CalEEMod (Appendix D) are divided by the operational life of the project, defined as 30 years.
MT = metric tons
CO2 = carbon dioxide

Impact Analysis

Methodology

The methodology for identifying construction- and operations-related GHG emissions is presented below.

[3] Carbon emissions are sequestered by biological, chemical, or physical processes that embed the carbon in structures that hold the emissions and keep them out of the atmosphere.

Approach

This evaluation of climate change is based on professional standards and information cited throughout the section. The key effects were identified and evaluated based on the environmental characteristics of the Project site and the magnitude, intensity, and duration of activities related to the construction and operation of the Project.

Construction-Related Emissions

Construction of the Project would generate GHG emissions from mobile and stationary construction equipment exhaust and on-road vehicle exhaust associated with material deliveries and worker commute trips. Construction-related GHG emissions were estimated with the CalEEMod emissions model (version 2013.2.2), which analyzes the type of construction equipment used and the duration of the construction period associated with construction of each of the land uses specified. A detailed inventory of construction phasing, equipment, and vehicle trips was obtained from the project applicant. A detailed inventory of data used to estimate construction-related emissions is presented in **Table 3.2-5** in Section 3.2, *Air Quality*.

Operation-Related Emissions

Once constructed, the Project would result in the long-term generation of GHG emissions associated with residential motor vehicle travel, energy consumption, water consumption, and wastewater and solid waste generation.

GHG emissions associated with Project operations were estimated using the CalEEMod model, based on motor vehicle trip generation data from the traffic impact analysis (**Appendix C**, *Traffic Impact Report*) and CalEEMod defaults for electricity, natural gas, water consumption, and wastewater and solid waste generation for the proposed residential uses. It was assumed that the Project would be fully built out and operational by 2017. Note that the construction is expected to be completed at the end of 2017. Assuming a 2017 operational year represents a conservative assumption in that emissions per rate of activity (e.g., per vehicle mile traveled) reduce over time through fleet turnover and modernization. Thus, emissions from 2017 would be slightly higher than assuming a 2018 operational year.

With regards to emission sources, indirect operational GHG emissions were also estimated for Project operations. Indirect emission sources include energy, waste, and water and wastewater-related emissions. Energy emissions include emissions associated with building electricity and non-hearth natural gas usage. Water and wastewater GHG emissions are those associated with supplying and treating water and wastewater for land use facilities. Waste GHG emissions are those associated with disposal of solid waste into landfills. GHG emission factors and methodology used to calculate indirect GHG emissions associated with the Project are based on CalEEMod default values for the proposed land uses.

Additionally, implementation of the Project would result in the loss of carbon stock and carbon sequestration due to removal of trees and other perennial vegetative matter. Loss of carbon stock is a one-time emission due to removal of natural vegetation and soils. Because the trees are unlikely to be used for commercial products and are more likely to be chipped (which eventually results in the release of carbon), it is assumed that tree removal results in loss of 100% of the carbon stock. These emissions were estimated by identifying the acreages of land cover change (2.7-acre development site) and then multiplying by factor values to the amount of estimated stock for that land cover (111

MT of CO_2 accumulation per acre of forest land/trees). Loss of carbon sequestration is an annual emission due to conversion of naturally vegetated areas to urban uses.[4] Under existing conditions, the natural land covers uptake carbon which is sequestered in vegetative matter (wood) and soils. These emissions were estimated by multiplying the number of pine (135) and oak (590) trees that would be removed by the annual carbon sequestration factors within the CalEEMod User's Guide for pine and hardwood trees.

Net emissions are presented at the annual time scale and are compared with the GHG thresholds discussed below.

Developing Significance Criteria

There are no established statewide, regional, or County significance criteria for evaluating GHG emissions or climate change impacts. The approach to developing significance criteria to evaluate impacts in this EIR is discussed below.

Project Contribution to Climate Change Impacts (Greenhouse Gas Emissions)

The State CEQA Guidelines do not define the amount of GHG emissions that would constitute a significant impact on the environment. Instead, the guidelines leave the determination of the significance of GHG emissions up to the lead agency and authorize the lead agency to consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence (State CEQA Guidelines 15064.4[a], 15064.7[c]).

As noted above, the MBUAPCD has not yet established a threshold by which to evaluate impacts related to climate change and does not recommend use of their draft thresholds. There is no GHG Reduction Plan adopted by the County for the community as a whole. Consequently, impacts related to climate change are evaluated based on the project's consistency with the County's identified reduction goal and Assembly Bill 32 reduction goal.

Scientific studies (as best represented by the IPCC's periodic reports) demonstrate that climate change is already occurring due to past GHG emissions. Forecasting future growth and related GHG emissions under BAU[5] conditions indicates large increases in those GHG emissions worldwide accompanied by an increasing severity of changes in global climate. Thus, the best scientific evidence concludes that global emissions must be reduced below current levels.

On a state level, the AB 32 Scoping Plan identified that an acceptable level of GHG emissions in California 2020 is 427 million metric tons (MT) of CO_2e, which is the same as 1990 GHG emissions level. This is approximately 11% less than 2005 California GHG emissions (477 million MT CO_2e) and was approximately 22% less than currently projected California 2020 BAU emissions (545 million MT CO_2e, not including the effect of state actions to reduce emissions.).

On the county level, the County has identified its 2020 target to be to reduce GHG emissions by 15% below 2005 levels by 2020. The County's 2005 emissions were approximately 1.648 million MT

[4] Sequestration is annual because living trees would continually sequester carbon, and carbon (i.e., CO_2e) emissions are evaluated on a yearly basis (metric tons per year).

[5] BAU conditions are defined as population and economic growth in the future using current (2008) building practices. BAU conditions presume no improvements in average energy efficiency, water efficiency, or fuel efficiency beyond that existing today.

CO2e (AMBAG 2010) and the County's target would correspond to 1.401 million MT CO_2e. The County's GHG emissions are projected to increase to 1.831 million MT CO_2e by 2020 (AMBAG 2010), which is an increase of approximately 11%. This target is approximately 24% (23.5% rounded up) below 2020 BAU conditions.

Thus, on a state and local level, if California and Monterey County can achieve these reductions, California as a whole will not contribute considerably to global GHG emissions. California's emissions in 2020 will still make a cumulative contribution to global GHG emissions, but relative to current baseline emissions will be substantively reduced.

To achieve these GHG reductions, there will have to be widespread reductions of GHG emissions from sources in many various sectors across the California economy including in Monterey County. Some of those reductions will need to come from the existing sources of emissions in the form of changes in vehicle emissions and mileage, changes in the sources of electricity, and increases in energy efficiency by existing residential, commercial, industrial, and agricultural development as well as other measures. While County action can help to promote GHG reductions from the existing economy, existing development is not under the discretionary land use authority of the County, and thus most of these reductions will come as the result of state and federal mandates. The remainder of the necessary GHG reductions will need to come from requiring new development to have a lower carbon intensity than BAU conditions. County land use discretion can substantially influence the GHG emissions from new development.

In terms of determining whether GHG emissions in Monterey County will be cumulatively considerable, one has to evaluate whether Monterey County is doing its part to ensure that California, as a whole, meets the Assembly Bill 32 target. As discussed above, the County's target is roughly consistent with the state target as a whole (and is actually a bit more conservative).

Thus, the simplest measure of whether Monterey County emissions will contribute considerably to GHG emissions in 2020 is whether the emissions are 24% less than BAU conditions. If they are, Monterey County would not contribute considerably to state or global GHG emissions and related climate change effects. In other words, if Monterey County emissions are greater than 76% of BAU GHG emissions, then the emissions of new development could contribute considerably to state and global GHG emissions and related climate change effects.

Climate Change Effects on Project

As described in the *Environmental Setting* section, climate change on a local basis to Monterey County water supplies, flooding, wildfire potential, environmental health, and other areas is reasonably foreseeable, although not quantifiable in many aspects at present. New development could expose persons and property to these effects. Developing strategies to adapt to foreseeable changes in climate will make new and existing development more resilient to future conditions. It should be noted that due to a number of recent appellate court rulings (most prominently *Ballona Wetlands Land Trust et al. v. City of Los Angeles* (2011) 201 Cal.App.4th 455 (Ballona Wetlands), there is presently a question as to whether CEQA requires analysis of impacts of the environment on a project or not. This EIR errs on the side of caution in providing such an analysis. However, absent contrary appellate court rulings or California Supreme Court rulings, at this time such an analysis may not be strictly legally required.

Significance Criteria

For this CEQA analysis, a project impact would be considered significant if the Project would result in any of these conditions.

A. Contribute to Climate Change Impacts

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. Specifically, project-related GHG emissions are considered significant if they if they are more than 76% of their unmitigated emissions level; this represents a reduction in GHG emissions equal to 24% below 2020 BAU conditions, which would allow the County to meet its target to reduce GHG emissions by 15% below 2005 levels by 2020.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

B. Effects of Climate Change

- Result in new development that is unprepared for reasonably foreseeable environmental changes due to climate change and, thus, would subject property and persons to additional risk of physical harm related to flooding, public health, wildfire risk, and other impacts.

Impacts and Mitigation Measures

The impact zone for climate change is the Monterey Peninsula and beyond. Climate change is inherently a cumulative impact concern, and the analysis is entirely an analysis of the Project's potential contribution to cumulative GHG impacts.

A. Contribute to Climate Change Impacts

Impact CC-A1: The Project would result in project-related greenhouse gas emissions, during construction and from operation, that could contribute to climate change impacts and be inconsistent with the goals of Assembly Bill 32. (Less than significant)

As noted in **Table 3.4-3**, the current annual GHG emissions at the 2.7-acre development site, represented as existing carbon stock and annual sequestration, are approximately 27.3 $MTCO_2$/year. With construction and operation of the Project, the GHG emissions would change as existing vegetation would be replaced with development associated with the Project.

Temporary Construction Emissions

Construction of the Project would result in emissions from fuel combustion of off- and on-road construction equipment and vehicles that contribute to GHG impacts.[6] **Table 3.4-4** presents an estimate of GHG emissions associated with construction of Project elements.

This construction impact is considered significant but would be reduced to a less than significant level with implementation of **Mitigation Measure CC-A1** because it would help to reduce construction-related GHG emissions.

[6] The loss of vegetation and associated carbon stock and sequestration due to development is considered a permanent source of GHG emissions and is included in the operational analysis provided in this section.

Table 3.4-4. Estimated Construction Greenhouse Gas Emissions (metric tons)

Development Site	CO_2	CH_4	N_2O	CO_2e
1. Site excavation, rough grading, tree removal, site utilities	144.7	<0.1	<0.1	145.9
2. Foundations, finish grading	114.1	<0.1	<0.1	115.0
3. Rough framing electrical, plumbing, sheetmetal, roof trusses	36.5	<0.1	<0.1	36.7
4. Finishes: sheetrock, closing walls, painting, plumbing, electrical, cabinetry, roofing	38.9	<0.1	<0.1	39.1
5. Finish sitework: driveways, exterior lighting, patios, landscaping	113.6	<0.1	<0.1	114.5
Total Construction GHG Emissions	**447.81**	**0.1**	**<0.1**	**451.1**
Amortized Construction GHG Emissions (30-years)	--	--	--	*15.0*

Notes:
Source: CalEEMod Emissions Modeling (**Appendix D** of this EIR).
CO_2 = carbon dioxide.
CH_4 = methane.
N_2O = nitrous oxide.
CO_2e = carbon dioxide equivalent.
GHG = greenhouse gas.

Mitigation Measure CC-A1: Implement best management practices for GHG emissions during construction.

Prior to starting construction activities, the applicant shall ensure the construction contractor includes the following best management practices (BMPs) in the construction specifications, to the extent feasible, to reduce construction-related GHG emissions:

- Use alternative-fueled (e.g., biodiesel, electric) construction vehicles/equipment for at least 15% of the fleet.
- Use local building materials where reasonably available (i.e., within the general Monterey Bay area defined as Monterey County, Santa Cruz County, and San Benito County).
- Recycle at least 50% of construction waste or demolition materials.

The applicant shall submit to Monterey County for review and approval a report of construction specifications demonstrating implementation of BMPs.

Mitigation Monitoring: Prior to starting construction activities, Monterey County RMA-Planning shall ensure that the construction specifications include best management practices to reduce construction-related GHG emissions. Prior to the issuance of grading or building permits, Monterey County RMA-Planning shall review and approve construction specifications demonstrating implementation of BMPs.

Permanent Emissions Sources

There would be two key permanent sources of GHG emissions.

- Project operational emissions due to direct and indirect emissions associated with building energy, transportation, waste generation, and water.

- Loss of carbon stock and carbon sequestration due to removal of trees and other perennial vegetative matter due to development.

To characterize total net emissions increases from exiting conditions, **Table 3.4-5** presents total net unmitigated operational emissions, accounting for changes in carbon stock and sequestration emissions. Also shown in **Table 3.4-5** is the estimated carbon stock emissions associated with land cover change, as well as loss of carbon sequestration associated with tree removal and additional carbon sequestration associated with planting new trees.

Table 3.4-5. Operational Greenhouse Gas Emissions Increases over Existing Conditions (metric tons/year)

Emissions Category	CO_2	CH_4	N_2O	CO_2e
Area	35.6	<0.1	<0.1	36.8
Electricity	42.8	<0.1	<0.1	43.0
Natural Gas	23.1	<0.1	<0.1	23.3
Mobile	268.9	<0.1	<0.1	269.2
Waste	2.2	0.1	<0.1	5.9
Water	2.9	0.1	<0.1	4.7
Sequestration from new trees	-4.1	--	--	-4.1
Gross Annual Emissions	371.5	0.2	<0.1	378.8
Carbon stock loss (annualized)[a]	*10.0*	*<0.1*	*<0.1*	*10.0*
Sequestration loss (annualized)[a]	*17.3*	*<0.1*	*<0.1*	*17.3*
Net Annual Emissions	398.8	0.2	<0.1	406.1

Notes:
Source: CalEEMod Emissions Modeling (Appendix D of this EIR).
Amortized Construction Total shown in Table 3.4-4.
[a] Pursuant to CalEEMod Guidance, carbon stock and sequestration totals shown in the annual CalEEMod (**Appendix D**) are divided by the operational life of the project, defined as 30 years.
CO_2 = carbon dioxide.
CH_4 = methane.
N_2O = nitrous oxide.
CO_2e = carbon dioxide equivalent.
GHG = greenhouse gas.

On their own, these emissions would not result in climate change or global warming. However, climate change is a cumulative impact resultant from the collective emissions of the state, the country, and the planet as a whole. Without mitigation, these emissions would contribute to cumulative Monterey County, California, and global emissions that would result in significant changes to the local, state, national, and global physical environment. Without mitigation, these emissions would also have an adverse effect on the ability of California as a whole to meet the reduction targets in Assembly Bill 32.

This operational impact is considered significant. **Mitigation Measure CC-A2a** and/or **Mitigation Measure CC-A2b** would mitigate emissions to a less-than-significant level through a combination of design features (such as energy efficiency or renewable energy), tree replanting, offset purchases

and/or credit for off-site forest preservation and sequestration sufficient to achieve necessary emission reductions.

Mitigation Measure CC-A2a: Reduce annual greenhouse gas emissions by 24% relative to business as usual using a combination of design features, replanting, and/or offset purchases.

Prior to issuance of the first Project construction permit, the applicant shall develop and implement a GHG Reduction Plan to reduce annual emissions of the Project by 24% below the unmitigated emissions level of 406 MTCO2e/year identified for the Project. The GHG Reduction Plan shall be provided to Monterey County for review and approval prior to grading, or ground disturbance or vegetation removal for any phase of the proposed project. The GHG Reduction Plan shall identify the specific design measures proposed to reduce GHG emissions from the proposed project, their timing, and the responsible party. The effect of state measures, as applied to project development, may be counted toward the 24% reduction level.

The GHG Reduction Plan shall demonstrate how the project-specific measures and the state measures will result in 2020 project emissions of no more than 309 MT CO2e.

The following potential measures could be used in the GHG Reduction Plan.

<u>Building Energy Use</u>

- Exceed Title 24 building envelope energy efficiency standards (applicable at the time of the building permit issuance) by 20%.
- Install programmable thermostat timers and smart meters.
- Obtain third-party heating, ventilation, and air conditioning commissioning and verification of energy savings.
- Install energy-efficient appliances.
- Require cool roof materials.[7]
- Install green roofs.
- Install solar water heaters.
- Install tankless water heaters.
- Install solar panels.
- HVAC duct sealing.
- Increase roof/ceiling insulation.

<u>Alternative Energy Generation</u>

- Install onsite solar facilities.

<u>Lighting</u>

- Install high-efficiency area lighting.

[7] Per EPA ENERGY STAR requirements, cool roofs should have albedo >= 0.25 for sloped roofs and >= 0.65 for low-slope roofs.

- Limit outdoor lighting.
- Maximize interior day light.

Transportation

- Provide electric vehicle charging stations.
- Provide local shuttle service to and from employment facilities in Pebble Beach.

Water

- Install low-flow water fixtures.
- Design water-efficient landscapes and landscape irrigation systems.
- Install rainwater collection systems.
- Install low-water use appliances and fixtures.
- Restrict the use of water for cleaning outdoor surfaces and prohibit systems that apply water to non-vegetated surfaces.

Area Landscaping

- Use only electric-powered landscaping equipment (not gas powered).

Solid Waste

- Institute or extend recycling and composting services.

Carbon Sequestration

- Plant additional trees beyond those already proposed.

Off-Site Mitigation

- Off-site mitigation could take many forms, including:
  - Paying for energy-efficiency upgrades of existing homes and business.
  - Installing off-site renewable energy.
  - Paying for off-site water efficiency.
  - Paying for off-site waste reduction.
  - Other methods.
- Off-site mitigation must be maintained in perpetuity to match the length of project operations to provide ongoing annual emission reductions.

Carbon Offsets

- Purchase offsets from a validated source[8] to offset annual GHG emissions.

[8] Validated sources are carbon offset sources that follow approved protocols and use third-party verification. At this time, appropriate offset providers include only those that have been validated using the protocols and methods of the Climate Action Registry, the Gold Standard, or the Clean Development Mechanism (CDM) of the Kyoto Protocol. Credits from other sources will not be allowed unless they are shown to be validated by protocols and methods equivalent to or more stringent than the CDM standards.

- Purchase offsets from a validated source to offset one-time carbon stock GHG emissions.

The GHG Reduction Plan shall consist of the measures described below unless the applicant demonstrates that alternative measures will collectively meet the overall performance standard. The applicant shall document the application of all final measures to proposed new development and demonstrate their effectiveness.

- State measures that will lower project emissions (compared to BAU conditions):
  - Renewable Portfolio Standard (19.1% reduction in energy emissions).
  - Vehicle efficiency measures (Pavley/Advanced Clean Cars) (19.5% reduction in mobile emissions).
  - Low Carbon Fuel Standard (7.6% reduction in mobile emissions).
- Project measures that could lower project emissions (compared to BAU conditions):
  - Features and measures to exceed Title 24 standards by 20%.
  - Installation of low-flow water fixtures and irrigation systems.
  - Expanding recycling and composting services to ensure recycling of 50% of materials.
  - Replanting of additional trees beyond those currently proposed.

Mitigation Monitoring: Prior to issuance of the first Project construction permit, Monterey County RMA-Planning shall review and approve the GHG Reduction Plan developed by the applicant.

Table 3.4-6 below shows that if the state measures and project-level reductions noted above are incorporated into the design, operational GHG emissions could be reduced by approximately 25.1% relative to BAU. While this scenario is hypothetical, it shows that reduction of emissions to below the significance criteria is feasible.

Table 3.4-6. Operational Greenhouse Gas Emissions Increases over Existing Conditions with State Measures and Potential Project Mitigation (metric tons/year)

Emissions Category	CO_2	CH_4	N_2O	CO_2e
Area	35.6	<0.1	<0.1	36.8
Electricity	13.4	<0.1	<0.1	13.5
Natural Gas	17.3	<0.1	<0.1	17.3
Mobile	215.0	<0.1	<0.1	215.3
Waste	1.1	0.1	<0.1	3.0
Water	1.7	<0.1	<0.1	3.1
Sequestration from new trees	-12.3	<0.1	<0.1	-12.3
Gross Annual Emissions	271.7	0.1	<0.1	276.7
Carbon stock loss (annualized)[a]	*10.0*	<0.1	<0.1	*10.0*
Sequestration loss (annualized)[a]	*17.3*	<0.1	<0.1	*17.3*
Net Annual Emissions - Project	299.0	0.1	<0.1	304.0
Net Annual Emissions –BAU[b]	398.8	0.2	<0.1	406.1
Reduction against BAU	--	--	--	*25.1%*

Notes:
Source: CalEEMod Emissions Modeling (**Appendix D** of this EIR).
Amortized Construction Total shown in Table 3.4-4.
[a] Pursuant to CalEEMod Guidance, carbon stock and sequestration totals shown in the annual CalEEMod (**Appendix D**) are divided by the operational life of the project, defined as 30 years.
[b] BAU emissions are shown in Table 3.4-5.
CO_2 = carbon dioxide.
CH_4 = methane.
N_2O = nitrous oxide.
CO_2e = carbon dioxide equivalent.
GHG = greenhouse gas.

As mentioned in Chapter 2, *Project Description*, under Open Space Preservation, if the inclusionary housing is built, then PBC would dedicate the 135-acre Old Capitol Site to the County, or entity approved by the County for parkland purposes (per Condition No. 143 in the approval of the Pebble Beach Company Project). The existing City of Monterey General Plan designates the Old Capitol Site for Planned Development. The Old Capitol Site contains 75 acres of Monterey pine forest habitat, and preserving the site as parkland would help to preserve carbon stock and sequestration. As noted below under **Mitigation Measure CC-A2b**, the Applicant may be able to formally obtain carbon offset credit for preserving the site as mitigation.

The Climate Action Reserve's (CAR's) Forest Project Protocol (version 3.2) indicates that this process of preservation may qualify as Avoided Conversion. Avoided Conversion involves the use of a conservation easement or transfer of lands to public ownership to prevent forest land being converted to non-forest land, with a preservation time commitment of 100 years (The Climate Action Reserve 2010). Lands that meet CAR's requirements for avoided conversion are then considered sinks and reservoirs for carbon due to the preservation and growth of forested lands that would otherwise be cleared to land uses that would be considered potential sources of carbon (i.e., non-forested lands).

For projects to qualify, it must be demonstrated that the project has a feasible and realistic potential for development and loss of the forested lands that would occur in the long run without the proposed preservation. Because the Old Capitol site is designated for development in the current City of Monterey General Plan, and, in theory, represents a technically feasible location for development, the County preliminarily finds that the lands proposed for preservation at the Old Capitol Site may meet the test for avoided deforestation in the Forest Project Protocol.

Mitigation Measure CC-A2b: Validate the greenhouse gas emission offset value of preserving Monterey Pine Forest on the Old Capitol Site using the Climate Action Registry Forest Project Protocol and preserve the lands in perpetuity.

In order for this mitigation to be valid, the applicant shall be required to submit an application to the Climate Action Reserve for the proposed preservation areas following the Forest Practices Protocol and shall obtain third-party verification per the protocol to validate the use of such lands for mitigation credit. If the Reserve validates an amount of GHG mitigation offset greater than or equal to the predicted emissions of the proposed project described above, the County shall accept preservation of land as mitigation of GHG emissions. If the applicant is unable to validate the preservation, the applicant shall be required to implement **Mitigation Measure CC-A2a**.

If validated, the project applicant shall establish preservation areas to prohibit a minimum of 75 acres of Monterey pine forest on the Old Capitol Site from being developed into non-forested land. The preservation area established by the project applicant shall be consistent with the Climate Action Reserve's Forest Project Protocol and shall ensure that the preservation area is maintained for a minimum of 100 years.

Mitigation Monitoring: Prior to issuance of the first Project construction permit, the applicant shall submit evidence to Monterey County RMA-Planning of a submitted application to the Climate Action Reserve for the proposed preservation areas following the Forest Practices Protocol and will obtain third-party verification per the protocol to validate the use of such lands for mitigation credit. If validated, Monterey County RMA-Planning shall ensure that the preservation area established is consistent with the Climate Action Reserve's Forest Project Protocol and will ensure that the preservation area is maintained for a minimum of 100 years.

As shown in **Table 3.4-7**, if the forest preservation offset credit is fully validated for the 75 acres of Monterey pine forest, then the project emissions would be reduced by more than the significance threshold of 24% reduction and would have a net reduction of GHG emissions. However, if the applicant is unable to validate the preservation, the applicant shall be required to implement **Mitigation Measure CC-A2a**.

Table 3.4-7. Potential Mitigated GHG Emissions Assuming 100 Percent Validation of Forest Preservation Offset Credit for Preservation of 75 acres of Monterey Pine Forest at the Old Capitol Site

Element	Unmitigated Annualized Emissions (MT CO_2e)	Annualized Preserve Stock (MT CO_2e)	Annual Preserved Sequestration (MT CO_2e/ year)	Net Annual Project Emissions (MT CO_2e/ year)
Project	406	-83	-392	-70

Source:
ICF Calculations using CalEEMod; number of trees on site not known so assumed to have same density as Monterey pine forest in areas included in the PBC buildout project (164 trees/acre).
Notes:
This table presents net GHG emissions associated with the proposed project, accounting for emissions and mitigation value of preservation of 75 acres of Monterey pine forest at the Old Capitol Site, assuming the preservation is validated through the Climate Action Reserve's protocol.
Carbon stock preservation total for the preserved area (~75 acres) was estimated as 8,324 MT CO_2e and was then annualized over a 100-year period per The Climate Action Reserve Forest Projects Protocol (The Climate Action Reserve 2010) to 83 MT CO_2e/year.

B. Effects of Climate Change

Impact CC-2: The Project would not result in significant exposure of persons or property to reasonably foreseeable impacts of climate change. (Less than significant)

As noted above, in light of the *Ballona Wetlands* appellate court ruling, current CEQA court precedent has indicated that analysis of the impact of the environment on a project, including the effects of climate change, may not be required. Nevertheless, this EIR has taken a conservative approach by completing this analysis. The County reserves the right to argue whether such analysis is or is not actually required by CEQA, should this issue be legally challenged in relation to this EIR.

Climate change impacts in California and Monterey County include sea level rise, extreme heat events, increase in infectious diseases and respiratory illnesses, and reduced snowpack and water supplies. Localized effects at the Project site could include increased temperatures, heat stress days and increased risk of wildland fire.

Because of its geographic location and elevation, the Project site would not be inundated by the most extreme predicted sea level rise of up 65.7 inches by 2100 (California Coastal Commission 2013).

In addition, residents and visitors to the Project area could be subjected to a range of other potential effects of climate change. For climate-specific changes for California coastal regions, summer temperatures are expected to rise by 1–3.3° C (2–11° F) by the end of this century (California Energy Commission 2009a:12). Given the coastal location of the Project area, while temperature changes could be substantial, they would not be likely to substantially increase heat stress days due to the relatively cooler coastal temperatures. Warmer temperatures may also lead to reduction in coastal fog, which is essential to providing moisture for maintaining the terrestrial ecosystem along the California coastline (California Natural Resources Agency 2009:67).

Studies also suggest that such decreases in precipitation could result in increased risk of water pollution and spread of infectious diseases in water and seafood (Intergovernmental Panel on Climate Change 2007; California Natural Resources Agency 2009; California Energy Commission 2009a, 2009b; Kahrl and Roland-Holst 2008). While changes in temperature, fog, water pollution, and disease vectors are possible, it is not feasible at this time to project the specific effect on the property and persons associated with the proposed project. While these effects are considered potential (and thus not entirely speculative), it is not feasible to prepare for effects that have not been fully locally characterized yet. As such, this does not give rise to a significant effect.

As described in Section 3.12, *Water Supply and Demand*, water for the proposed project may be provided from either the Carmel River or the regional water supply project (Regional Project) (or an equivalent) after 2016. The primary source of water for a regional project is desalination of seawater. As discussed in Section 3.12, *Water Supply and Demand*, current regional water supply planning, is somewhat uncertain. If the Monterey Peninsula utilizes desalination as its principle water source in the future, this is a source that would not ultimately be hindered by future climate changes in precipitation and river flows, and the proposed project would not be expected to be affected by climate change–induced changes in water supply in the very long run. However, in the absence of a regional water supply project, the project would be reliant on the Carmel River, groundwater, the Salinas River, or recycled water or aquifer storage and retrieval that might be affected or limited in the long term by climate change. Currently, climate models have not been sufficiently downscaled to predict the effects of climate change on Carmel River flows. Therefore, the reliability of provision of water from the Carmel River in the long run is unknown.

As discussed in Section 3.12, *Water Supply and Demand*, because there is a potential for the project to intensify water rationing after 2016 in the event of inadequate regional water supply. This is considered a significant and unavoidable water supply impact and it may be further worsened if future regional water supplies are limited by climate change impacts. It is important to note that at this time there is insufficient evidence to conclude the precise effect of climate change on local water supplies; this disclosure errs on the conservative side by identifying a potential effect on regional riverine or groundwater sources other than desalination.

While other climate change effects are also likely, at this time their local character and extent cannot be specifically estimated with any accuracy. Thus, based on current understanding of climate change effects, the proposed project does not appear to result in a significant vulnerability to reasonably foreseeable effects of climate change such that undue risks to persons or property would occur. As noted above, there is the potential that the project's reliance directly or indirectly on new regional water supplies, as discussed in Section 3.12, *Water Supply and Demand*, may be affected in the long term by climate change–related impacts, but there is insufficient information to currently conclude the nature of those effects.