

## **5.5 GREENHOUSE GAS EMISSIONS**

This section evaluates the potential for the Project to result in significant impacts related to greenhouse gas emissions. The evaluation of impacts includes an analysis of the Project's direct and indirect greenhouse gas emissions, as well as an assessment of the Project's consistency with the requirements of the City's 2014 Climate Action Plan. EIR Section 5.2, Air Quality, provides an analysis of the Project's regional and local air quality impacts.

### **5.5.1 Setting**

**Background Information.** Greenhouse gases are referred to as such because they contribute to the "greenhouse effect," which traps heat radiated from the Earth's surface in the atmosphere. "Global climate change" describes changes in the earth's climate, such as an increase or decrease in temperatures, or a shift in precipitation patterns.

There is a substantial body of scientific evidence that climate change is occurring due to an increase in the concentration of greenhouse gases in the Earth's atmosphere. The United Nations Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report considers new evidence of climate change based on many independent scientific analyses, from observations of the climate system, paleoclimate archives, theoretical studies of climate processes, and simulations using climate models. The IPCC Fifth Assessment Report summarizes observed changes in the Earth's climate system, including:

- The atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years. Carbon dioxide concentrations have increased by 40% since pre-industrial times, primarily from fossil fuel emissions and secondarily from net land use change emissions. The ocean has absorbed about 30% of the emitted anthropogenic carbon dioxide, causing ocean acidification.
- Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased.
- Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850. In the Northern Hemisphere, 1983–2012 was likely the warmest 30-year period of the last 1400 years.
- Ocean warming dominates the increase in energy stored in the climate system, accounting for more than 90% of the energy accumulated between 1971 and 2010. It is virtually certain that the upper ocean (0–700 m) warmed from 1971 to 2010.

- There is high confidence that the rate of sea level rise since the mid-19th century has been larger than the mean rate during the previous two millennia. Over the period 1901 to 2010, global mean sea level rose by 0.19 meters.

According to the IPCC, global warming may cause a variety of environmental changes, such as:

- It is virtually certain that over most land areas, warmer and fewer cold days and nights would occur, and warmer and more frequent hot days and nights would occur.
- It is very likely that the frequency of warm spells/heat waves would be increased over most land areas.
- It is very likely that the frequency of heavy precipitation events would be increased over most areas.
- It is likely that areas affected by drought would be increased.
- It is likely that intense tropical cyclone activity would be increased.
- It is likely that there would be increased incidence of extreme high sea levels.

The effects of climate change may also include a rise in sea level caused by an expansion of the ocean water volume due to an increase in water temperature, melting glaciers and melting polar ice caps. Estimates of future sea level elevations vary considerably based on assumptions regarding greenhouse gas emission control effectiveness and other factors. Sea level rise predictions recommended for use by the California Coastal Commission (2015) indicate that compared to 2000 conditions, sea level could rise two to 12 inches by 20130; five to 24 inches by 2050; and 17-66 inches by 2100.

State law defines greenhouse gases to include the following: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. Another greenhouse gas is water vapor. Water vapor is not recognized in state law and climate change programs such as the Kyoto Protocol because there is no obvious correlation between water vapor concentration and specific human activities.

Greenhouse gases have varying global warming potential. The reference gas for global warming potential is carbon dioxide, which has been assigned a global warming potential of “1.” Methane gas is another gas that contributes to global warming and has been assigned a global warming potential of 21, which means that it has a greater global warming effect than carbon dioxide on a molecule per molecule basis. Sulfur hexafluoride has a global warming potential of 23,900. The most important greenhouse gas in human-induced global warming is carbon dioxide. While other greenhouse gases have higher global warming potential, carbon dioxide is emitted in such vastly higher quantities that it accounts for 85 percent of the global warming

potential of all greenhouse gases emitted by the United States. Greenhouse gas emissions are typically measured in terms of carbon dioxide equivalents, which is the product of the mass of a particular greenhouse gas and its specific global warming potential.

### **5.5.2 Regulatory Framework**

Greenhouse gas emission reduction regulations applicable to the proposed Project are briefly described below.

**California Executive Order S-3-05.** Former Governor Schwarzenegger issued Executive Order (EO) S-3-05 in 2005 to establish statewide greenhouse gas emissions reduction targets. EO S-3-05 provides that by 2010, emissions be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions be reduced to 80 percent of 1990 levels. In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report. The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce greenhouse gas emissions. These are strategies that could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies.

**California Global Warming Solutions Act (AB 32).** Health and Safety Code §§ 38500, *et seq.* (AB 32) was signed into law in 2006 and established a statewide goal of reducing greenhouse emissions to 1990 levels by 2020 and requires the California Air Resources Board (CARB) to prepare a Scoping Plan that outlines strategies for reducing greenhouse gases to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide greenhouse gas emissions. The Scoping Plan was approved by CARB in 2008 and includes measures to address greenhouse gas emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. The Scoping Plan includes a range of greenhouse gas reduction actions that may include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms.

**Senate Bill 97 (SB 97).** SB 97 (adding Public Resources Code § 21083.05) was enacted in 2007 and acknowledges that climate change is an environmental issue that requires analysis in CEQA documents. The bill also required the Office of Planning and Research to develop, and the California Resources Agency to certify and adopt amendments to the CEQA Guidelines for the analysis of greenhouse gas emissions. Amendments to the CEQA Guidelines addressing greenhouse gas emissions became effective in 2010.

**Senate Bill 375 (SB 375).** SB 375 was enacted in 2008 and enhances the State's ability to reach AB 32 goals by directing CARB to develop regional greenhouse gas emission reduction targets primarily through a reduction in vehicle miles traveled. SB 375 directs each of the State's 18 major Metropolitan Planning Organizations to prepare a "sustainable communities strategy" that contains a growth strategy to meet specified emission targets for inclusion in the Regional

Transportation Plan. In 2010, CARB adopted final regional targets for reducing greenhouse gas emissions from 2005 levels by 2020 and 2035. The Santa Barbara County Association of Governments was assigned targets of an eight percent reduction in greenhouse gases from transportation sources by 2020 and a 13 percent reduction in greenhouse gases from transportation sources by 2035.

**City of Goleta Climate Action Plan.** Consistent with California’s objectives outlined in AB 32, the City added Conservation Element Implementation Action 5 (CE-IA-5) to its 2006 General Plan/Coastal Land Use Plan in 2009, which requires the City to develop a Greenhouse Gas Reduction Plan supporting the State’s implementation of AB 32. The City’s Climate Action Plan (2014) outlines a framework to reduce community greenhouse gas emissions in a manner that meets the intent of CE-IA-5 and is supportive of AB 32 and Executive Order S-3-05. The Plan identifies both quantified and non-quantified measures to meet greenhouse gas reduction targets; establishes a 2007 baseline inventory; a planning horizon of 2007 through 2030 and quantifies greenhouse gas greenhouse has emission from community-at-large and City operations; establishes reduction targets for 2020 and 2030; identifies measures to reduce greenhouse gas levels, focusing on those that the City has authority to implement; and provides guidance for monitoring progress on an annual basis. While CE-IA-5 does not specify a reduction target, the City has decided to use a target of reducing future emissions of greenhouse gases 11 percent below 2007 emissions by 2020 and 26 percent below 2020 levels by 2030.

The Climate Action Plan includes the following greenhouse gas emission reduction categories and general implementation actions:

- *Building Energy* measures are intended to reduce greenhouse gas emissions by improving the energy efficiency of both new and existing residential and commercial buildings, increasing the use of renewable energy, and improving community-wide understanding of energy management.
- *On-Road Transportation and Land Use* measures focus on reducing emissions by reducing vehicle miles traveled through multimodal transportation options, and reducing emissions by supporting design guidelines that will result in more compact, walkable, and transit-accessible neighborhoods.
- *Water Consumption* measure are intended to reduce water demand and conserve water, thereby reducing energy use for moving water and associated emission reductions.
- *Off-Road Transportation and Equipment* measures are intended to increase the use of alternative fuels in construction, landscaping, off-road equipment, and vehicles, and reduce the consumption of fossil fuels.
- *Solid Waste* measures reduce emissions by diverting waste from landfills, and supporting continual improvement in equipment and operations associated with solid waste management.

All new residential buildings must comply with applicable law including, without limitation, the Goleta Municipal Code, to meet the objectives of greenhouse gas emissions reductions under AB 32.

**City of Goleta Energy Efficiency Standards.** The Goleta City Council adopted the 2010 Edition of the California Green Building Standards Code (24 California Code of Regulations Part 11) as the Green Building Code of the City (as codified in Goleta Municipal Code Chapter 15.12). The Green Building Code mandates new requirements for planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, environmental quality, and installer and special inspector qualifications. In 2010, the City also adopted Goleta Municipal Code Chapter 15.13, entitled “Energy Efficiency Standards,” establishing minimum energy efficiency standards for new building construction. The Municipal Code requires that new residential and nonresidential construction and additions greater than 500 square feet use a performance approach to demonstrate that they exceed the 2008 California Green Building Standards by 15 percent.

### **5.5.3 Thresholds of Significance**

According to the CEQA Guidelines, impacts related to greenhouse gas emissions would be significant if a project would:

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

Neither the State of California, Santa Barbara Air Pollution Control District, nor the City of Goleta has established CEQA significance thresholds for greenhouse gas emissions. On June 2, 2010, the Bay Area Air Quality Management District’s (BAAQMD) Board of Directors unanimously adopted thresholds of significance to assist in the CEQA review of projects. The thresholds establish the level at which the District determined air pollution emissions would cause significant environmental impacts. The BAAQMD’s guidance on determining the significance of greenhouse gas emissions are summarized in Table 5.5-1.

**Table 5.5-1**  
**Bay Area Air Quality Management District**  
**Greenhouse Gas Significance Determination Guidelines**

Greenhouse Gas Emission Source	Operational Emissions
Non-Stationary Sources	1,100 MT of CO <sub>2</sub> E/year OR 4.6 MT CO <sub>2</sub> E/SP/year
Stationary Sources	10,000 MT CO <sub>2</sub> E/year

SP = service population  
MT = metric tons

According to the methodology used to establish the BAAQMD greenhouse gas threshold, the threshold of 1,100 MT CO<sub>2</sub>E/year is the emissions level below which a project's contribution to global climate change would be less than "cumulatively considerable." For projects that are not stationary sources, the BAAQMD established an "efficiency" threshold that is intended to avoid penalizing large projects that incorporate emissions-reducing features and/or that are located in a manner that results in relatively low vehicle miles traveled. This threshold establishes a maximum allowable quantity of emissions per capita or "service population," which is defined as project residents and employees. As defined by the BAAQMD thresholds, a project's contribution to greenhouse gas emissions would not be cumulatively considerable if the project would result in less than 4.6 metric tons of CO<sub>2</sub>E/service population/year.

On March 5, 2012 the Alameda County Superior Court issued a judgment finding that the BAAQMD failed to comply with CEQA when it adopted its greenhouse gas emissions thresholds. The court did not determine whether the thresholds were valid on the merits, but found that the adoption of the thresholds was a project under CEQA. The court ordered the District to set aside the thresholds until it complied with CEQA. The District appealed the Alameda County Superior Court's decision. The Court of Appeal of the State of California, First Appellate District, reversed the trial court's decision. The Court of Appeal's decision was appealed to the California Supreme Court, which granted limited review.<sup>1</sup> On December 17, 2015, the California Supreme Court reversed the Court of Appeal's decision and remanded the matter back to the Court of Appeal for further consideration.

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<sup>1</sup> In March 2012, an Alameda County Superior Court (*California Building Industry Assoc. v. Bay Area Air Quality Management District* (March 5, 2012) Alameda Super. Ct. Case No. RG10-548693) ruled that BAAQMD needed to comply with CEQA before adopting its 2010 Air Quality CEQA Guidelines, which included significance thresholds for criteria air pollutants and GHGs. On August 13, 2013, the Court of Appeal (*California Building Industry Assoc. v. Bay Area Air Quality Management District* (2013) 218 Cal.App.4th 1171, rev. granted) reversed the lower court's decision and upheld the BAAQMD Guidelines. That decision was appealed to the California Supreme Court, which granted review on November 26, 2013. On December 17, 2015, the California Supreme Court made a partial ruling, but remanded the substantive question, i.e., whether the 2010 Air Quality CEQA Guidelines were valid, back to the Court of Appeal for a decision (*California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369).

The BAAQMD greenhouse gas emissions thresholds included substantial evidence that compliance with the thresholds demonstrate that a project would be consistent with the statewide emissions reduction goal established in AB 32, and therefore, would result in a less than significant impact under CEQA. For purposes of the Kenwood Village Project, the City determines that BAAQMD's greenhouse gas emissions significance thresholds have a strong regulatory and technical underpinning. In June 2010, the Santa Barbara County Planning and Development Department produced a memorandum, "Support for Use of Bay Area Air Quality Management District Greenhouse Gas Emissions Standards," providing evidentiary support for reliance on the BAAQMD standards as interim thresholds of significance in Santa Barbara County (SBCPD 2010). The memorandum notes that certain counties in the Bay Area are similar to Santa Barbara County in terms of population growth, land use patterns, general plan policies, and average commute patterns and times.

Given that the City of Goleta does not have established thresholds of significance for greenhouse gas emissions, and as the City is located in Santa Barbara County, the rationale for applicability of the BAAQMD thresholds should generally apply. Therefore, for this Project, the City has applied the following two thresholds of significance.<sup>2</sup> A significant impact related to greenhouse gas emissions would occur if the Project would:

1. Exceed the daily long-term greenhouse gas significance thresholds adopted by the BAAQMD of 1,100 metric tons of CO<sub>2</sub>E/year, or 4.6 metric tons of CO<sub>2</sub>E/service population/year.
2. Fail to implement reasonable and feasible means to minimize greenhouse gas emissions from a qualitative standpoint in a manner that is consistent with the goals and objectives of AB 32 as implemented through the City's 2014 Climate Action Plan.

## **5.5.4 Impact Evaluation**

### **Greenhouse Gas Emissions**

Short-term construction-related greenhouse gas emissions would result primarily from the operation of construction equipment and on-road vehicle exhaust. Long-term emissions would result from Project-generated vehicle trips (mobile emissions), the combustion of natural gas for space and water heating, and the use of landscape maintenance equipment (area sources). Other sources of greenhouse gas emissions include Project-related use of electricity and energy required to transport water. The short- and long-term greenhouse gas emissions of the Project were estimated using the CalEEMod v.2013.2.2 computer model, and the results of the CalEEMod model are provided in EIR Appendix C.

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<sup>2</sup> Use of the BAAQMD threshold does not imply that it is a threshold that the City of Goleta has formally adopted, or should adopt, as a greenhouse gas significance threshold for all present or future project analyses.

**Construction Emissions.** Project construction is anticipated to begin in 2017 and occur over a period of 12-18 months. Based on the CalEEMod results, construction activity for the Project would generate an estimated 496 metric tons of carbon dioxide equivalents (CO<sub>2</sub>E) (Table 5.5-2). Neither the City of Goleta, County of Santa Barbara, nor the BAAQMD has adopted a construction-related emissions significance threshold. Following the South Coast Air Quality Management District’s recommended methodology to amortize construction-related emissions over a 30-year period, construction of the Project would generate an equivalent of approximately 16.5 metric tons of CO<sub>2</sub>E per year.

**Table 5.5-2  
 Estimated Construction Emissions of Greenhouse Gases**

Year	Estimate Greenhouse Gas Construction Emissions			
	Carbon Dioxide (metric tons)	Methane (metric tons)	Nitrous Oxide (metric tons)	Carbon Dioxide Equivalent (metric tons)
2017-2018	494	0.1	0.0	496
Amortized over 30 years				16.5 metric tons CO <sub>2</sub> E/year

Source: CalEEMod 2013.2.2.

**Operation Emissions.** Operation emissions include emissions from mobile and area sources, electricity and natural gas use, supplying water, and the disposal of solid waste. Mobile source greenhouse gas emissions were estimated using vehicle trip generation data from the Project’s traffic evaluation (ATE, 2016). Table 5.5-3 depicts the total operation emissions of greenhouse gases that would result from the Project.

**Table 5.5-3  
 Estimated Long-Term Annual Emissions of Greenhouse Gases**

Emission Source	Long-Term Annual Emissions			
	Carbon Dioxide (metric tons)	Methane (metric tons)	Nitrous Oxide (metric tons)	Carbon Dioxide Equivalent (metric tons)
Area	0.7	<0.1	0	0.7
Energy	144	<0.1	<0.1	145.0
Waste	7.3	0.4	0.0	16.3
Water	9.9	<0.1	<0.1	11.0
Mobile	451.6	<0.1	0	452.0
<b>Total Operation Emissions</b>				<b>625.0 metric tons CO<sub>2</sub>E</b>

Source: CalEEMod 2013.2.2

**Combined Construction and Operation Emissions.** Table 5.5-4 shows the combined construction and operation greenhouse gas emissions that would result from the Project.

**Table 5.5-4  
 Combined Annual Emissions of Greenhouse Gases**

Emission Source	Annual Emissions (metric tons)
Construction	16.5
Operation	625.0
<b>Total Annual Emissions</b>	<b>641.5</b>
<b>Threshold</b>	<b>1,100 metric tons CO<sub>2</sub>E/year</b>
<b>Does the Project Exceed the Threshold?</b>	<b>No</b>

Source: CalEEMod 2013.2.2.

As shown in Table 5.5-4, Project-related emissions of greenhouse gases would total approximately 641.5 metric tons of CO<sub>2</sub>E per year, which would not exceed the 1,100 metric tons CO<sub>2</sub>E/year threshold of significance. Therefore, the Project’s greenhouse gas emissions would not exceed the significance criterion and would result in a **less than significant (Class III)** impact.

**Climate Action Plan Consistency**

The City’s Climate Action Plan outlines a framework to reduce community greenhouse gas emissions by a target of 11 percent below 2007 emissions by 2020, and 26 percent below 2020 levels by 2030. The Project would be consistent with the Plan’s framework of measures to reduce building energy use because it would comply with the City’s adopted energy efficiency standards, including the implementation of requirements specified by the Green Building Code as codified in the Goleta Municipal Code. The Project would be consistent with Climate Action Plan measures to reduce transportation-related greenhouse gas emissions by providing housing near employment centers; providing on-site pedestrian circulation improvements (e.g., on-site trails on the “arm parcels” that connect the project site to existing off-site paths); constructing off-site sidewalk improvements; and by providing housing along an existing transit line (MTD Route 23) and the existing Calle Real Class II bike lane. Greenhouse gas emission reductions would also be achieved by reducing project-related water use through compliance with the water efficiency standards specified by the Green Building Code; by extending a recycled water line to the project site for landscape irrigation; and by emphasizing the use of low-water using landscaping on the project site. By implementing these design and construction measures, the Project would implement the applicable greenhouse gas reduction measures identified by the

City's Climate Action Plan and the Project would result in **less than significant (Class III)** impacts related to Plan consistency.

### **5.5.5 Cumulative Impacts**

According to the methodology used to establish the BAAQMD greenhouse gas thresholds, the threshold of 1,100 MT CO<sub>2</sub>E/year is a numeric emissions level below which a project's contribution to global climate change would be less than cumulatively considerable. Therefore, the Project would result in **less than significant (Class III)** cumulative impacts related to emissions of greenhouse gases.

### **5.5.6 Mitigation Measures**

The Project would not result in significant greenhouse gas emission impacts and no mitigation measures are required.