

4.5 GREENHOUSE GAS EMISSIONS

4.5.1 Existing Setting

4.5.1.1 Physical Scientific Basis of Climate Change

Certain gases in the earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. Infrared radiation is absorbed by GHGs. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the earth's climate, known as global climate change or global warming.

Climate change is a global issue. GHGs are global pollutants with very long atmospheric lifetimes (some last several thousand years). They stand in contrast to criteria pollutants and toxic air contaminants, which have localized air quality effects with relatively short atmospheric lifetimes (about one day). The atmospheric concentrations of CO₂, CH₄, and N₂O have increased to levels unprecedented in at least the last 800,000 years. CO₂ concentrations have increased by 40% since pre-industrial times, primarily from fossil fuel emissions and secondarily from net land use change emissions such as deforestation and urban development. From 1750 to 2011, CO₂ emissions from fossil fuel combustion and cement production have released 375 gigatons of carbon (GtC) to the atmosphere, while deforestation and other land use change are estimated to have released 180 GtC. This results in cumulative anthropogenic emissions of 555 GtC, of which approximately 43.2% has accumulated in the atmosphere, 28.8% has accumulated in natural terrestrial ecosystems, and 27.9% has been taken up by the ocean, causing acidification of ocean waters (IPCC 2013).

Because GHG emissions have global impacts, the quantity of GHGs that it takes to ultimately result in climate change is not precisely known; the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature or to global, local, or micro climate.

4.5.1.2 Adaptation to Climate Change

According to the Intergovernmental Panel on Climate Change (IPCC), which was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, global average temperature is expected to increase by 3 to 7 degrees Fahrenheit by the end of the century, depending on future GHG emission scenarios (IPCC 2008). Resource areas other than air quality and global average temperature could be indirectly affected by the accumulation of GHG emissions. For example, an increase in the global average temperature is expected to result in a decreased volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada. Snowpack in the Sierra Nevada provides

both water supply (runoff) and storage (within the snowpack before melting), and is a major source of water supply for the state (including the project site). According to the California Energy Commission (CEC), the snowpack portion of the water supply could potentially decline by 30 to 90% by the end of the 21st century (CEC 2006). A study cited in a report by the California Department of Water Resources projects that approximately 50% of the statewide snowpack will be lost by the end of the century (Knowles and Cayan 2002). Although current forecasts are uncertain, it is evident that this phenomenon could lead to significant challenges in securing an adequate water supply for a growing population. An increase in precipitation falling as rain rather than snow also could lead to increased potential for floods because water that would normally be held in the Sierra Nevada snowpack until spring could run off and flow into the Central Valley concurrently with winter storm events. This scenario would place more pressure on California's levee/flood control system.

Another outcome of global climate change is sea level rise. Sea level rose approximately 7 inches during the last century and it is predicted to rise an additional 7 to 22 inches by 2100, depending on the future levels of GHG emissions (IPCC 2008). If this occurs, resultant effects could include increased coastal flooding, saltwater intrusion, and disruption of wetlands (CEC 2006). As the existing climate throughout California changes over time, the ranges of various plant and wildlife species could shift or be reduced, depending on the favored temperature and moisture regimes of each species. In the worst cases, some species could become extinct or be extirpated from the state if suitable conditions are no longer available.

4.5.1.3 Greenhouse Gas Emission Sources

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, electric utility, residential, commercial, and agricultural sectors (California Air Resources Board [CARB] 2009). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CARB 2009). Emissions of CO₂ are primarily byproducts of fuel combustion. CH₄, a highly potent GHG, typically results from fugitive emission sources such as agricultural activities and landfills. N₂O is also largely attributable to agricultural activities and soil management. Smaller amounts of CH₄ and N₂O emissions occur as a byproduct of fuel combustion. CO₂ sinks, or reservoirs, include vegetation and the ocean, and absorb CO₂ through sequestration and dissolution, respectively.

California is one of the larger emitters of GHGs in the world. In 2004, California released 484 million metric tons (MMT) of CO₂ equivalent (CO₂e) (CARB 2009) and is the 12th to 16th largest emitter of CO₂ in the world (CEC 2006). The 2010 Clean Air Plan indicates that Santa Barbara emitted 4.3 MMT of CO₂e in 2007 (SBCAPCD 2011).

CO₂e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential (GWP), is a measure of the heat-trapping ability of a given GHG over a 100-year period relative to the heat-trapping ability of CO₂. The GWP of CO₂ is, by definition, 1. The GWP values used in this report are based on the IPCC Second Assessment Report (SAR) and United Nations Framework Convention on Climate Change (UNFCCC) reporting guidelines, and are defined in Table 4.5-1. Although the IPCC Fourth Assessment Report (AR4) presents different GWP estimates, the current inventory standard relies on SAR GWPs to comply with reporting standards and consistency with regional and national inventories (IPCC 2007). The SAR GWPs are used in CARB's California inventory

and the California Global Warming Solutions Act of 2006 (AB 32) Scoping Plan estimates. (For more information about AB 32, see Section 4.5.2.)

**TABLE 4.5-1
LIFETIMES, GLOBAL WARMING POTENTIALS, AND ABUNDANCES OF SEVERAL
SIGNIFICANT GREENHOUSE GASES**

Gas	Global Warming Potential (100 years)	Lifetime (years)¹	Atmospheric Abundance
CO ₂ (ppm)	1	50–200	379
CH ₄ (ppb)	21	9–15	1,774
N ₂ O (ppb)	310	120	319
HFC-23 (ppt)	11,700	264	18
HFC-134a (ppt)	1,300	14.6	35
HFC-152a (ppt)	140	1.5	3.9
CF ₄ (ppt) ²	6,500	50,000	74
C ₂ F ₆ (ppt) ²	9,200	10,000	2.9
SF ₆ (ppt)	23,900	3,200	5.6

¹ Defined as the half-life of the gas.

² Carbon tetrafluoride (CF₄) and hexafluoroethane (C₂F₆) are PFCs.

Definitions: ppm = parts per million; ppb = parts per billion; ppt = parts per trillion

Sources: IPCC 1996, 2001, 2007

Expressing individual GHG emissions as CO₂e converts the heat-trapping ability and longevity of the individual GHGs to a common basis that is equivalent to the effect that would occur if only CO₂ were being emitted.

Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 38% of total GHG emissions in the state. This sector was followed by the electric power sector (including generation sources both in-state and out-of-state that supply electricity to California) (22%) and the industrial sector (20%) (CARB 2008).

4.5.2 Regulatory Framework

Federal

Federal U. S. Environmental Protection Agency (USEPA)

The USEPA is responsible for implementing Federal policy to address global climate change. The federal government administers a wide array of public-private partnerships to reduce GHG emissions generated by the United States. These programs focus on energy efficiency, renewable energy, methane and other non-CO₂ gases, agricultural practices, and implementation of technologies to achieve GHG reductions.

Currently, there are no federal regulations that address GHG emissions. However, in *Massachusetts v. Environmental Protection Agency*, 579 U.S. 497, 127 S. Ct. 1438 (2007), the United States Supreme Court found that the United States Environmental Protection Agency (EPA) has statutory authority under the Clean Air Act to regulate "greenhouse gas" emissions (including CO₂ emissions) from new motor vehicles. In response to this decision, the EPA is drafting regulations that address GHG emissions.

State Regulations

California Air Resources Board

The California Air Resources Board (CARB), a part of the California EPA, is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets state ambient air quality standards, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB has primary responsibility for the development of California's State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts.

California Executive Order S-3-05

In 2005, Governor Arnold Schwarzenegger issued California Executive Order S-3-05 establishing the following emission targets for California: 1) reduce GHG emissions to 2000 levels by 2010; 2) reduce GHG emissions to 1990 levels (427 MMT CO₂e) by 2020; and 3) reduce GHG emissions to 80 percent below 1990 levels (85 MMT CO₂e) by 2050. Executive Orders are binding on State agencies. Accordingly, S-3-05 will guide State agencies' efforts to control and regulate GHG emissions but will have no direct binding effect on local efforts.

Executive Order S-13-08

Executive Order S-13-08 requests that the National Academy of Sciences (NAS) convene an independent panel to complete the first California Sea Level Rise Assessment Report and initiate an independent sea level rise science and policy committee made up of state, national and international experts.

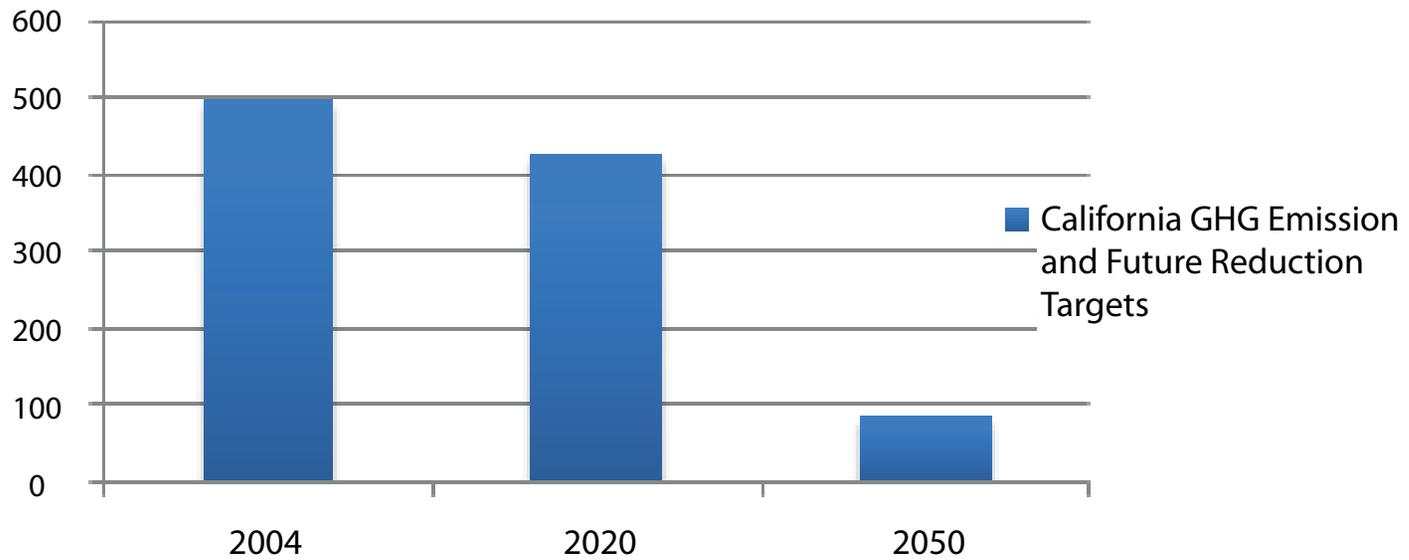
Before release of the final Sea Level Rise Assessment Report, the Executive Order also requires that all State agencies planning construction projects in areas vulnerable to future sea level rise consider a range of sea level rise scenarios for the years 2050 and 2100 in order to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise.

The Executive Order also directs the California Resources Agency, through the Climate Action Team, to develop a state Climate Adaptation Strategy. The strategy will summarize the best known science on climate change impacts to California, assess California's vulnerability to the identified impacts, and outline solutions that can be implemented within and across State agencies to promote resiliency.

California Global Warming Solutions Action of 2006 (AB 32)

In September 2006, Governor Arnold Schwarzenegger signed Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006 (Health and Safety Code §§ 38500, *et seq.*). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and places a cap on statewide greenhouse gas (GHG) emissions, requiring reduction in statewide GHG to 1990 levels by 2020. AB 32 also includes guidance to institute emission reductions in an economically efficient manner and conditions to ensure that

California GHG Emissions and Future Reduction Targets (MMT CO₂e/year)



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Source: City of Goleta

Figure 4.5-1
California GHG Emissions and Future Reduction Targets (MMT CO₂e/year)
Shelby Residential Project EIR

businesses and consumers are not unfairly affected by the reductions. AB 32 demonstrates California's commitment to reducing the rate of GHG emissions and the State's associated contribution to climate change, without limiting population or economic growth. Although AB 32 did not amend CEQA, it identifies the environmental problems in California caused by global warming (see, e.g., Health and Safety Code § 38501).

Senate Bill (SB) 97

SB 97, enacted in 2007, amends the CEQA statute to include analysis of GHG emissions and the effects of GHG emissions as part of any CEQA analysis. In March 2010, the California Office of Administrative Law promulgated CEQA amendments that provide regulatory guidance for the analysis and mitigation of the potential effects of GHG emissions in CEQA document, found in CEQA Guidelines § 15183.5. To streamline analysis, CEQA provides for analysis through compliance with a previously adopted plan or mitigation program under special circumstances.

State of California Climate Change Proposed Scoping Plan

In October 2008, CARB published its Climate Change Proposed Scoping Plan (Proposed Scoping Plan), which is the State's plan to achieve the GHG reductions required by AB 32. The Proposed Scoping Plan contains the primary strategies that California will implement to achieve a reduction of 169 MMT of CO₂e, or approximately 30 percent from the State's projected 2020 emission level of 596 MMT of CO₂e under a "business-as-usual" scenario. The Proposed Scoping Plan states that land use planning and urban growth decisions will play an important role in the State's GHG reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions. CARB further acknowledges that decisions on how land is used will have large impacts on the GHG emissions that will result from transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. The Proposed Scoping Plan was approved by CARB on December 11, 2008.

In addition to the Scoping Plan, CARB has also released the Preliminary Draft Staff Proposal: Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the CEQA (ARB Draft Staff Proposal). The CARB Draft Staff Proposal includes potential interim performance standards for various project types and emissions sources including construction, energy, water use, waste, transportation, and total mass GHG emissions. Specific thresholds and performance criteria for these categories have yet to be developed.

Senate Bill (SB) 375

Senate Bill 375 (SB 375) establishes mechanisms for the development of regional targets for reducing passenger vehicle GHG emissions. On September 23, 2010, CARB adopted the vehicular GHG emissions reduction targets that were developed in consultation with the State's metropolitan planning organizations (MPOs); the targets require a 7 to 8 percent reduction by 2020 and a 13 to 16 percent reduction by 2035 for each MPO. Through the SB 375 process, MPOs will work with local jurisdictions to develop sustainable communities strategies (SCS) designed to integrate development patterns and the transportation network in a way that reduces GHG emissions while meeting housing needs and other regional planning objectives. The MPOs are expected to prepare their first SCS according to their respective regional transportation plan (RTP) update schedule.

Regional

Santa Barbara County Air Pollution Control District (SBCAPCD)

The Santa Barbara County Air Pollution Control District (SBCAPCD) is the agency principally responsible for comprehensive air pollution control in Santa Barbara County. In order to provide GHG emission guidance to the local jurisdictions, the SBCAPCD has been developing a proposal to adopt GHG thresholds of significance for stationary source projects. Additional public review for consideration and adoption of greenhouse gas thresholds is expected, but the timing of the adoption of greenhouse gas thresholds for stationary source projects is unknown.

Local

City of Goleta Energy Efficiency Standards

The Goleta General Plan/Coastal Land Use Plan (GP/CLUP) does not directly address GHGs. However, on November 2, 2010, the Goleta City Council adopted the 2010 Edition of the California Green Building Standards Code (CALGreen Code) (24 California Code of Regulations Part 11) as the Green Building Code of the City (as codified in Goleta Municipal Code (GMC) Chapter 15.12). The 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 GMC 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.

4.5.3 Project Impacts and Mitigation

4.5.3.1 Thresholds of Significance

Based on the City's Initial Study Checklist (CEQA Guidelines, Appendix G; Environmental Checklist Form), a significant impact related to GHGs could occur if the project would:

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

The adopted CEQA amendments require a Lead Agency to make a good-faith effort based, to the extent possible, on scientific and factual data to describe, calculate, or estimate the amount of GHG emissions resulting from a project. They give discretion to the Lead Agency whether to:

- Use a model or methodology to quantify GHG emissions resulting from a project, and which model or methodology to use; and/or
- Rely on a qualitative analysis or performance-based standards.

In addition, a Lead Agency should consider the following factors, among others, when assessing the significance of impacts from GHG emissions on the environment:

- The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting.
- Whether the project emissions exceed a threshold of significance that the Lead Agency determines applies to the project.
- 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.

The CEQA Guidelines allow Lead Agencies to establish significance thresholds for their respective jurisdictions.

Currently, neither the State of California, nor SBCAPCD, nor the City of Goleta has established CEQA significance thresholds for GHG emissions. Indeed, many regulatory agencies are sorting through suggested thresholds and/or making project-by-project analyses. This approach is consistent with that suggested by OPR in its technical advisory entitled “CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act Review” (OPR 2008):

...In the absence of regulatory standards for GHG emissions or other specific data to clearly define what constitutes a ‘significant project’, individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice.

In June 2010, the Bay Area Air Quality Management District (BAAQMD) became the first regulatory agency in the nation to approve guidelines that establish thresholds of significance for GHG emissions (BAAQMD 2010a). These thresholds are summarized in Table 4.5-2.

**TABLE 4.5-2
BAY AREA AIR QUALITY MANAGEMENT DISTRICT GHG THRESHOLDS OF
SIGNIFICANCE**

GHG Emission Source Category	Operational Emissions
Other than Stationary Sources	1,100 MT CO ₂ e/year OR 4.6 MT CO ₂ e/SP/year (residents + employees)
Stationary Sources	10,000 MT CO ₂ e/year
MT = metric ton SP = service population	

The BAAQMD threshold is a promulgated CEQA threshold that has undergone full public review and comment, with approval by the BAAQMD governing board, and technical support by BAAQMD staff. The BAAQMD GHG threshold applies to a nine-county area of very diverse population and land use. BAAQMD’s adoption of GHG thresholds is subject to ongoing litigation.¹ Whether or not these GHG thresholds are ultimately upheld, however, does not diminish their usefulness in making GHG calculations for purposes of this CEQA analysis.

¹ 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 their 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 upholding the BAAQMD

According to the methodology used to establish the BAAQMD GHG threshold, the threshold of 1,100 MT CO₂e/yr is a numeric emissions level below which a project's contribution to global climate change would be less than "cumulatively considerable." This emissions rate is equivalent to a project size of approximately 60 single-family dwelling units. Of all the projects to be expected to be built out in the San Francisco Bay Area Air Basin by 2020, approximately 59 percent of these projects would exceed this threshold; this fraction of projects would account for 92 percent of all emissions expected at buildout in 2020. For projects that are above this "bright-line cutoff level" of 1,100 MT CO₂e/yr, emissions from these projects would still be less than cumulatively significant if the project as a whole would result in an efficiency of 4.6 MT CO₂e per service population per year for mixed-use projects (BAAQMD 2010b).

For purposes of this project, the City determines that BAAQMD's GHG significance threshold has a strong regulatory and technical underpinning. It is based on substantial data and is intended as a regulatory threshold. In addition, the climatic regime in the Goleta-Santa Barbara area that governs energy demand for space heating and cooling is also very comparable to that occurring in the BAAQMD. Further, 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 proposed 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 GHG 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 to the project.² A significant impact related to GHGs could occur if the project would:

1. Exceed the daily significance threshold adopted by the BAAQMD, i.e., of 1,100 MT CO₂e/yr, for operational GHG emissions and/or result in significant GHG emissions based on a qualitative analysis.
2. Fail to employ reasonable and feasible means to minimize GHG emissions from a qualitative standpoint, in a manner that is consistent with the goals and objectives of AB 32.

4.5.3.2 Project-Specific Impacts

Construction-related emissions would be generated from heavy-duty construction equipment and on-road vehicle exhaust emissions. Operational emissions would be generated from resident and visitor vehicle trips to and from the project. Area source GHG emissions are a result of natural gas consumption associated with space and water heating and the usage of landscape maintenance equipment. Additionally, the project would consume electricity and potable water, both of which generate GHG emissions associated with electricity production used to transport the water.

Guidelines. That decision was appealed to the California Supreme Court, which granted review on November 26, 2013. The matter is currently pending before the California Supreme Court.

² 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 GHG significance threshold for all present or future project analyses.

GHG emissions associated with construction and operation of the project would predominantly be in the form of CO₂, and are presented in the form of CO₂e. While emissions of other GHGs, such as CH₄ and N₂O, are important with respect to global climate change, the project is not expected to emit substantial quantities of GHGs other than CO₂, even when factoring in the relatively larger GWP of CH₄ and N₂O. This is because most emissions from the project would be associated with vehicular emissions (i.e., mobile-source emissions), natural gas combustion, and indirect emissions associated with the purchase of electricity. Although these sources emit small quantities of N₂O and CH₄, emissions of CO₂ would dominate the GHG emissions from the project. Emissions of PFCs and SF₆ are typically associated with industrial facilities and are not expected to be emitted from the project.

Impact GHG-1. Generation of Emissions in Excess of Threshold Levels

Construction Emissions

Emissions of GHGs during project construction have the potential to produce short-term impacts. As stated above, neither the City nor SBCAPCD has adopted significance criteria for construction activities. Therefore, this analysis amortizes construction emissions and compares the total of the amortized construction emissions and operational emissions to the threshold of significance noted above.

Construction-related GHG emissions associated with heavy-duty construction equipment, material delivery trucks, and construction worker trips would occur intermittently during construction of the project. Following completion of the project, construction-related GHG emissions would cease. Therefore, these emissions are considered temporary and short-term in nature.

The methodology for quantifying GHG emissions from construction activities relies upon the California Emissions Estimator Model (CalEEMod) Version 2013.2.2 air quality modeling software, which is the most current version available. The CalEEMod modeling results are provided in Appendix B.

Table 4.5-3 presents the GHG emissions generated during project construction activities. The construction is assumed to occur over the course of a period of 12 to 14 months, and thus the estimated emissions reflect a peak annual emission rate from construction activities. As shown in Table 4.5-3, the project would generate approximately 545 MT of CO₂e during the entire construction period.

As discussed above, no GHG thresholds have been established by the City of Goleta or SBCAPCD. However, BAAQMD does recommend implementation of BMPs to help control and reduce GHG emissions. Implementation of BMPs recommended by BAAQMD (see Mitigation Measure GHG-1a) is therefore required to help reduce construction-related GHG emissions.

**TABLE 4.5-3
ESTIMATED CONSTRUCTION-RELATED GHG EMISSIONS**

Construction Year	Project Construction CO₂e Emissions (metric tons)	Annual CO₂ Emissions Amortized over 30 Years (metric tons)
2014	545	18.2

Operational Emissions

The project's operational emissions generated by direct and indirect sources were calculated using the CalEEMod v. 2013.2.2 model. As shown in Table 4.5-4, the project would result in 940.2 MT CO₂e per year, which is below the quantitative significance threshold of 1,100 MT CO₂e per year. Therefore, using this quantitative standard, GHG emissions associated with the project are considered less than significant.

**TABLE 4.5-4
QUANTITATIVE ASSESSMENT OF ESTIMATED PROJECT MITIGATED OPERATIONAL
ANNUAL GHG EMISSIONS**

Emissions Source	Emissions (MT CO₂e/yr)
Area Sources	0.7
Vehicle Usage (Mobile Sources)	664.7
Energy Usage	215.2
Waste	30.4
Water Demand	11.0
<i>Projected Annual Operational CO₂e Emissions</i>	922.0
Annual Construction Emissions Amortized over 30 Years	18.2
<i>Total Amortized and Operational Emissions</i>	940.2
Significance Threshold	1,100 MT CO₂e/yr
Exceeds Significance Threshold?	NO
Emissions calculated using CalEEMod v. 2013.2.2 computer model. See Appendix B for detailed modeling report.	

Impact GHG-2. Consistency with the goals and objectives of AB 32

The objective of emissions reductions under AB 32 is to reduce California's GHG emissions back to 1990 levels by 2020. One aspect of emissions reductions required under AB 32 is reductions in energy usage in buildings. CARB's Proposed Scoping Plan sets a goal of reducing energy usage in buildings by 15.2 MMT CO₂e per year by 2020 (CARB 2008).

The project will comply with the standards of the California Building Code (California Code of Regulations, Title 24; "CBC") that are in effect at the time of development. Updates to the CBC since the adoption of AB 32 have been designed to achieve the Proposed Scoping Plan's reduction goal, as identified in the California Energy Efficiency Strategic Plan (CPUC 2011). The 2013 CBC, currently in effect, would result in a 25% reduction in building energy usage as compared to the standards of the 2008 CBC (CEC 2012). Therefore, the project will be constructed to standards that are consistent with the goals and objectives of AB 32. The project's impacts would be less than significant.

4.5.4 Cumulative Impacts

The analysis of a project's GHG emissions is calibrated to ensure that the project-level impacts are not "cumulatively considerable." Therefore, the determination of no project-level impact necessarily means that there is not significant contribution to a cumulative impact on account of the project. See Section 4.5.3.

4.5.5 Mitigation Measures

The project's greenhouse gas emissions impacts are considered less than significant. However, the following mitigation measures are recommended to further reduce the project's GHG impacts.

Recommended Mitigation Measure GHG-1a. Implement BAAQMD Best Management Practices for Construction

The project must reduce greenhouse gas emissions by incorporating the following measures into project construction:

- a. Use alternative-fueled (e.g., biodiesel, electric) construction vehicles/equipment for at least 15% of the fleet;
- b. Use at least 10% local building materials (from within 100 miles of the project site);
- c. Recycle at least 50% of construction waste or demolition materials.

Plan Requirements and Timing: Permittee will submit a report demonstrating compliance with the recommended measures to the Director, or designee, before the City issues a certificate of occupancy.

Monitoring: The Director, or designee, will review report and use it to improve greenhouse gas reduction recommendations for other projects.

Recommended Mitigation Measure GHG-1b. Implement Measures to Reduce Operational GHG Emissions

The project must include, without limitation, the following list of potential design features. These features must be incorporated into the project design to ensure consistency with applicable law. The permittee must demonstrate the incorporation of the following project design features before the City issues building or occupancy permits, as applicable.

Energy Efficiency

- Install high-efficiency lighting and energy efficient appliances (before building permits).

Water Conservation and Efficiency

- Install water-efficient irrigation systems (before building permits).
- Install low-flow faucets, toilets, and showers (before building permits).

Plan Requirements and Timing: These requirements must be shown on plans before the Planning and Environmental Review Director, or designee, issues any Land Use Permit.

Monitoring: The Planning and Environmental Review Director, or designee, must verify compliance with this mitigation measure before the City issues a certificate of occupancy for any building.

4.5.6 Residual Impacts

Upon implementation of these mitigation measures, residual impacts associated with greenhouse gas emissions would remain less than significant (Class III).