SECTION 4.6
GREENHOUSE GAS EMISSIONS

4.6 GREENHOUSE GAS EMISSIONS

This section is based on an analysis prepared by AECOM entitled *Greenhouse Gas Emissions Analysis*, January 2011 and updates provided in September 2011 and March 2012. The original report is included as Appendix I, in Volume II, Technical Appendices, of this EIR. Other references to appendices in this section apply to appendices included in the AECOM report.

4.6.1 Existing Setting

The project site is located adjacent to the Santa Barbara Airport and approximately 1.25 miles from the coastline, at an elevation of approximately 26 feet (approximately 8 meters) above sea level.

4.6.1.1 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 (CO_2), methane (CH_4), nitrous oxide (N_2O), hydroflourocarbons, perflourocarbons (PFCs), and sulfur hexaflouride (SF_6). 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 problem. GHGs are global pollutants with very long atmospheric lifetimes (one year to 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).

Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that currently more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 54% is sequestered within a year through ocean uptake, uptake by northern hemisphere boreal forest growth, and other terrestrial sinks, whereas the remaining 46% of human-caused CO_2 emissions remains stored in the atmosphere (Seinfeld and Pandis 1998).

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.

4.6.1.2 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), which 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 30–90% 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 would become extinct or be extirpated from the state if unsuitable conditions are no longer available.

4.6.1.3 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] 2009a). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CARB 2009a). Emissions of CO_2 are primarily byproducts of fuel combustion. CH_4, a highly potent GHG, typically results from fugitive emission sources such as agricultural activities and landfills. N_2O is also largely attributable to agricultural activities and soil management. Smaller amounts of CH_4 and N_2O emissions occur as a byproduct of fuel combustion. CO_2 sinks, or reservoirs, include vegetation and the ocean, and absorb CO_2 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 CO_2 equivalent (CO_2e) (CARB 2009a) and is the 12th to 16th largest emitter of CO_2 in the world (CEC 2006). The 2010 Clean Air Plan indicates that Santa Barbara emitted 4.3 MMT of CO_2e in 2007 (Santa Barbara County Air Pollution Control District and Santa Barbara County Association of Governments 2011).

CO_2e 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 CO_2. The GWP of CO_2 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 4.6-1. 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 4.6.2.)

TABLE 4.6-1
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_2O (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_2F_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] CF_4 and C_2F_6 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 CO_2e 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 CO_2 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).

4.6.2 Regulatory Framework

CEQA requires that lead agencies consider the reasonable foreseeable adverse environmental effects of projects they are considering for approval. Greenhouse gas emissions have the potential to adversely affect the environment because they contribute to global climate change. In turn, global climate change has the potential to result in rising sea levels, which can inundate

low lying areas; to affect rain and snowfall, leading to changes in water supply; and to affect habitat, leading to adverse effects on biological and other resources. Thus, GHG emissions require consideration in CEQA documents.

In considering global climate change, past regulatory actions of the State of California are informative. For example, in 2002, the sate adopted Assembly Bill (AB) 1493 requiring that CARB adopt by January 1, 2005, regulations to achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light duty trucks and other vehicles determined by CARB to be vehicles whose primary use is non-commercial transportation in the state." CARB adopted implementing regulations for AB 1493 in 2004.

In 2005, the Governor of California adopted Executive Order S-3-05, declaring that increased temperatures could reduce the Sierra Nevada mountain range's snowpack, increase air quality problems, and potentially cause a rise in sea levels. To address those concerns, the executive order set greenhouse gas emissions targets such that emissions would be reduced to year 2000 levels by the year 2010, year 1990 levels by the year 2020, and 80% of year 1990 levels by the year 2050.

In 2006, AB 32, the California Global Warming Solutions Act of 2006, was signed into law. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statement GHG emissions. It requires that statewide GHG emissions be reduced to 1990 levels by 2020. To effectively implement that cap, among other things, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. In October 2008, CARB published its climate change proposed scoping plan, which is the state's plan to achieve GHG reductions in California required by AB 32.

In August 2007, the state adopted Senate Bill (SB) 97. This bill directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Natural Resources Agency guidelines for the feasible mitigation of GHG emissions of the effects of GHG emissions, as required by CEQA. Those guidelines provide as follows:

- Consistent with Section 15126.4(a), lead agencies shall consider feasible means, supported by substantial evidence and subject to monitoring or reporting, of mitigating the significant effects of greenhouse gas emissions. Measures to mitigate the significant effects of greenhouse gas emissions may include, among others:
    - Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision.
    - Reductions in emissions resulting from a project through implementation of project features, project design, or other measures, such as those described in Appendix F of the AECOM report (Appendix I).
    - Off-site measures, including offsets that are not otherwise required, to mitigate a project's emissions.
    - Measures that sequester greenhouse gases.
    - In the case of adoption of a plan, such as a general plan, long range development plan, or plans for the reduction of greenhouse gas emissions, mitigation may include the identification of specific measures that may be implemented on a project-by-project basis. Mitigation may also include the incorporation of specific measures or policies

found in an adopted ordinance or regulation that reduces the cumulative effect of emissions.

In 2007, the Governor directed the California Building Standards Commission to work with specified state agencies on the adoption of green building standards for residential, commercial, and public building construction for the 2010 Code adoption process. That process resulted in the adoption of the 2010 California Green Building Code (CALGreen). Specific elements of the CALGreen Code include:

- 20% mandatory reduction in indoor water use, with voluntary goal standards for 30, 35, and 40% reductions.
- Separate water meters for nonresidential buildings' indoor and outdoor water use, with a requirement for moisture-sensing irrigation systems for larger landscape projects.
- Requirement for diversion of 50% of construction waste from landfills, increasing voluntarily to 65 and 75% for new homes and 80% for commercial projects.
- Mandatory inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies.
- Requirement for low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particle board.

On November 2, 2010, the Goleta City Council adopted CALGreen, which is codified in Title 15, Chapter 15.12 of the Goleta Municipal Code, referred to as the "Green Building Code" of the City. That action became effective January 1, 2011. CALGreen 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.

On November 2, 2010, the Goleta City Council also adopted an ordinance implementing a local building energy efficiency standard for the City that includes a "reach" goal of an additional 15% reduction in GHGs when compared to the Title 24 (2008) California Building Standards Code. This standard is codified in Title 15, Chapter 15.13 of the Goleta Municipal Code, referred to as the "Energy Efficiency Standards" of the City. The increased energy efficiency standards apply to new buildings or structures of any size, including the project.

4.6.3 Project Impacts and Mitigation

4.6.3.1 Thresholds of Significance

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

a. Generate greenhouse gas 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 greenhouse gases.

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 greenhouse gas emissions resulting from a project. They give discretion to the Lead Agency whether to:

- Use a model or methodology to quantify greenhouse gas 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 greenhouse gas emissions on the environment:

- The extent to which the project may increase or reduce greenhouse gas 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 greenhouse gas emissions.

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

Currently, neither the State of California, nor SBCAPCD[1], 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 CAPCOA in its technical advisory entitled "CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act Review" (OPR 2008a):

> …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 2010). These thresholds are summarized in Table 4.6-2.

TABLE 4.6-2
BAY AREA AIR QUALITY MANAGEMENT DISTRICT GHG THRESHOLDS OF SIGNIFICANCE

GHG Emission Source Category	Operational Emissions
Other than Stationary Sources	1,100 MT* CO_2e/year OR 4.6 MT CO_2e/SP**/year (residents + employees)
Stationary Sources	10,000 MT CO_2e/year
Plans	6.6 MT CO_2e/SP*/year (residents + employees)
*MT = metric ton ** SP = service population	

[1] ~~While SBCAPCD has not adopted thresholds by which to evaluate climate change impacts, SBCAPCD has proposed a stationary source threshold of 10,000 MT CO_2e per year.~~

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, but that litigation does not concern the legitimacy of the thresholds so much as the process used in their adoption.[21]

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 generally applies. Therefore, for the Marriott Residence Inn and Hollister Center Project, the City has applied the following two thresholds of significance to the project.[32] Would the project:

1. Exceed the daily significance threshold adopted by the Bay Area Air Quality Management District, i.e., of 1,100 MT CO_2e/yr, for operational GHG emissions and/or result in significant GHG emissions based on a qualitative analysis.
2. 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 (i.e., a reduction in GHG emissions of 20% for state-owned buildings by 2015).

4.6.3.2 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 worker and hotel guest 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,

[21] In March 2012, an Alameda County Superior Court ruled that BAAQMD needed to comply with CEQA prior to adopting their 2010 Air Quality CEQA Guidelines, which included significance thresholds for criteria air pollutants and greenhouse gases. The Superior 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 a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them until BAAQMD complied with CEQA. In May 2012, the BAAQMD filed an appeal with the Court of Appeal, First Appellate District, and the plaintiff filed a cross-appeal shortly thereafter.

[32] 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.

both of which generate GHG emissions associated with electricity production used to transport the water.

GHG emissions associated with construction and operation of the project would predominantly be in the form of CO_2, and are presented in the form of CO_2e. While emissions of other GHGs, such as CH_4 and N_2O, are important with respect to global climate change, the project is not expected to emit substantial quantities of GHGs other than CO_2, even when factoring in the relatively larger GWP of CH_4 and N_2O. 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 N_2O and CH_4, emissions of CO_2 would dominate the GHG emissions from the project. Emissions of PFCs and SF_6 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[43]

Construction Emissions

Emissions of GHGs during project construction have the potential to produce short-term impacts. As stated above, neither the City of Goleta 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 1,100 MT CO_2e per year identified above to determine significance.

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) 2011 Version 2011.1.1 air quality modeling software, which is the most current version available. Detailed assumptions used in the CalEEMod modeling results are provided in Appendix I.

Table 4.6-3 presents the GHG emissions generated during project construction activities. The construction is assumed to occur over the course of a 12-month period, and thus the estimated emissions reflect a peak annual emission rate from construction activities. As shown in Table 4.6-3, the project would generate approximately 526 MT of CO_2e during the entire construction period.

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

[43] See Section 4.6.3.1, Threshold a.

TABLE 4.6-3
ESTIMATED CONSTRUCTION-RELATED GHG EMISSIONS

Construction Year	Project Construction CO_2e Emissions (metric tons)	Annual CO_2 Emissions Amortized over 30 Years (metric tons)
2011	526	18

Operational Emissions

The project's operational emissions generated by direct and indirect sources were calculated using a combination of the CalEEMod model, methodologies from CARB's *Mandatory Reporting of Greenhouse Gas Emissions Regulations*, and engineering calculations based on operational data provided by the developer for hotel similar to the project. The Oceanside Marriott Residence Inn in Oceanside, California, is similar to the project in a number of respects, such that both hotels could be expected to have similar GHG emission profiles:

- Both hotels are of similar size (project = 118 rooms; Oceanside Marriott Residence Inn = 125 rooms).
- Both have the same business model in that they serve the same extended stay business travel market (i.e., both are all-suites hotels).
- Both have a common design basis in that they both carry the Marriott Residence Inn brand name, which requires certain common features for major aspects of their design and operation.
- Both are located in coastal Southern California and have comparable seasonal heating and cooling demands.

While the Oceanside hotel is slightly larger than the project in terms of guest rooms, no adjustment was made to the utility data based on the number of guest rooms, thereby helping to ensure that the utility usage and corresponding GHG emissions were not under estimated.

Emissions associated with electricity consumption required to transport water to the property and wastewater from the property were conservatively estimated using the projected maximum daily water use for the project identified in the prior Mitigated Negative Declaration (35,000 gallons per day) for a 140-room facility. The indirect electricity emission factor for water transport was calculated using the CalEEMod emissions model~~, as defined in the BAAQMD CEQA guidance document and associated GHG computation plug-in for URBEMIS (BAAQMD 2010), was applied to the daily water consumption value to estimate indirect emissions for water transport~~. Detailed emissions calculations are provided in Appendix A of the AECOM report (Appendix I).

The CalEEMod ~~URBEMIS~~ model was also used to calculate the GHG emissions associated with project-generated traffic and minor area source emissions including landscape maintenance. Default emissions assumptions for hotel uses were not used because the proposed project is an extended stay facility. Instead, the "All Suites Hotel" trip generation assumptions from the Institute of Traffic Engineers Trip Generation Manual, 8th Edition was utilized for both GHG calculation and traffic analysis purposes. It should be noted that both analyses assumed 100% project occupancy, even though the expected annual occupancy for the project is 87%. Therefore, expected emissions and traffic generation were both

conservatively estimated (i.e., over-estimated). The CalEEMod ~~URBEMIS~~ files are provided in Appendix B of the AECOM report (Appendix I).

The facility would operate a shuttle van to and from the Santa Barbara Municipal Airport (SBMA). During off times, the van would be used to run errands, primarily for purposes of maintenance. CARB methodology was used to calculate the additional GHG emissions associated with the estimated shuttle trips. More detailed emissions calculations and assumptions can be found in Appendix A of the AECOM report (Appendix I).

As shown in Table 4.6-4, the project emissions are below the quantitative significance threshold of 1,100 MT CO_2e per year. Therefore, using this quantitative standard, GHG emissions associated with the project are considered less than significant.

TABLE 4.6-4
QUANTITATIVE ASSESSMENT OF ESTIMATED PROJECT MITIGATED OPERATIONAL ANNUAL GHG EMISSIONS

Operational Scenario/Emissions Source	Emissions (MT CO_2e/year)
Vehicle Usage (Mobile Sources)	360 ~~371~~
Electricity Consumption	323
Natural Gas Consumption (Space Heating)	190
Solid Waste Disposal	29
Energy Used for Transporting Water for Consumption by the Project	7 ~~45~~
Marriott Shuttle Van	4
~~Emergency Generator Testing~~	~~4~~
Landscape Maintenance	<1
Projected Annual Operational CO_2e Emissions	914 ~~938~~
Annual Construction Emissions Amortized over 30 Years	18
Total Amortized and Operational Emissions	932 ~~956~~
Significance Threshold	1,100
Exceeds Significance Threshold?	NO

Impact GHG-2. Consistency with the goals and objectives of AB 32[54]

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. To achieve this goal, it is estimated that it will be necessary to reduce grid-based electricity usage in buildings by 20% in the year 2015 (CBSC 2010). To determine whether that goal has been met, the first step is to identify what emissions would exist under a business as usual (BAU) scenario. The current 2009 Leadership in Energy and Environmental Design (LEED) standard (LEED 2009 for New Construction and Major Renovation Rating System) uses the Title 24 (2005) standard as the BAU building performance for new projects in California.

The Title 24 (2008) building standard superseded the Title 24 (2005) building standard with an effective date of January 1, 2010. The Title 24 (2008) standard provides newer, more stringent energy consumption requirements than the Title 24 (2005) standard. Since energy use

[54] See Section 4.5.3.1, Threshold b.

reductions are directly related to GHG emissions reductions from fossil fuel combustion, a given energy efficiency reduction at a source is directly proportional to the reduction in GHG emissions associated with that source. The energy efficiency improvements of the 2008 standard over the 2005 standard from the CEC report are presented in Table 4.6-5 for non-residential heating, cooling, and lighting. There is an overall reduction in energy use of 4.9% due to implementation of the Title 24 (2008) building standard in non-residential building construction. However, this reduction is heavily weighted by industrial building construction that includes industrial fans, refrigeration equipment, and other equipment for which the Title 24 (2008) building standard requires minimal improvements. A more appropriate comparison is with the energy use reductions for that subset of uses consisting of heating, cooling, and lighting. The 2008 standard requires significant reductions in non-residential energy use for heating, cooling, and lighting over the baseline Title 24 (2005) building standard. Specifically, the 2008 standard results in an estimated 37% energy reduction in heating, an 8% reduction in cooling, and a 12% reduction in lighting energy consumption. Overall, a weighted average reduction for these three energy uses results in an average 11.3% reduction on a statewide basis (see Table 4.6-5).

TABLE 4.6-5
ESTIMATION OF STATEWIDE REDUCTIONS IN ENERGY USE FOR NON-RESIDENTIAL* CONSTRUCTION FROM HEATING, COOLING, AND LIGHTING DUE TO IMPLEMENTATION OF CALIFORNIA TITLE 24 (2008) BUILDING STANDARD FROM THE BASELINE TITLE 24 (2005) BUILDING STANDARD

Energy Use Source	Statewide 2005 Baseline Energy Use (GW**) (%)	Statewide 2008 Energy Use (GW) (%)	Energy Savings 2005 – 2008 (GW)	Reduction from Baseline	Weighted Fraction, Reduction from Baseline (%)***
Heating	33 (2.6%)	21 (1.9%)	12	37.2%	
Cooling	392 (31.4%)	360 (32.5%)	32	8.3%	11.3%
Lights	822 (65.9%)	726 (65.6%)	96	11.7%	
Totals	1,247 (100.0%)	1,107 (100.0%)	140		

* Industrial energy uses are not included in this table.
** GW = gigawatt
*** Reduction from baseline is weighted by the fraction of each energy use in 2005 baseline
SOURCE: California Energy Commission, Impact Analysis – 2008 Update to the California Energy Efficiency Standards for Residential and Non-Residential Buildings, Architectural Energy Corporation, Table 2, November 7, 2007.

As the project is currently subject to the Title 24 (2008) standard, the project would achieve an energy efficiency that is at least 11% beyond that of the Title 24 (2005) BAU baseline for non-residential heating, cooling, and lighting, as shown in Table 4.6-5.

In addition, as previously noted, the Goleta City Council adopted CALGreen, effective January 1, 2011. CALGreen mandates new requirements for certain efficiencies in buildings. In addition, on November 2, 2010, the Goleta City Council adopted an ordinance implementing a local building energy efficiency standard for the City that includes a “reach” goal of an additional 15% reduction in GHGs when compared to the Title 24 (2008) California Building Standards Code. The increased energy efficiency standards apply to new buildings or structures of any size, including the project.

Table 4.6-6 details the overall energy reduction caused by the transition to the Title 24 (2008) California Building Standards Code, and the implementation of CALGreen.

TABLE 4.6-6
GHG EMISSIONS REDUCTIONS FOR THE PROJECT

GHG Emissions Reduction Source	Credited Reduction
Reduction of GHG emissions over Baseline Title 24 (2005) Building Code by Implementation of Title 24 (2008) Building Code (see also Table 4.6-5)	11%
Further minimum emissions reductions required by the CALGreen 2010 standard and the City of Goleta Local Building Energy Efficiency Standards (Reach Code)	15% (unquantified)
Total expected GHG emissions reduction beyond the Baseline Title 24 (2005) Building Code	26%
Green Building Action Team emissions reduction requirement for State-owned buildings by 2015	20%
Do the emissions reduction expectations equal or exceed the Green Building Action Team emissions reduction requirement for State-owned buildings?	Yes

The analysis above demonstrates that the cumulative GHG emissions reductions resulting from implementation of Title 24 (2008), CALGreen (2010), and the City of Goleta Local Building Energy Efficiency Standards (Reach Code) would result in a significant reduction in energy use (and hence GHG emissions) over the 2005 BAU baseline percent (see Table 4.6-6). The total expected GHG emissions reductions over this baseline are approximately 26%. This GHG reduction is consistent with the AB 32 goals established in 2006, of 20% for state-owned buildings (by 2015). Therefore, the project operational emissions are also considered less than significant when judged on a qualitative basis.

4.6.4 Cumulative Impacts

The analysis of a project's greenhouse gas 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 4.6.3.

4.6.5 Mitigation Measures

All new residential and commercial buildings must comply with California Building Standards Code Title 24 (2008), Goleta Municipal Code (GMC), Title 15, Chapter 15.12, the Green Building Code of the City, as well as GMC, Title 15, Chapter 15.13 Energy Efficiency Standards of the City. These regulations result in total expected GHG emissions reductions of 26%, consistent with Executive Order S-3-05 targets and AB 32 goals. In addition, the following mitigation is recommended to reduce adverse but less-than-significant impacts.

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

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 Planning and the Design Review Board for review prior to occupancy.

Monitoring: City staff will review report and use it to improve greenhouse gas reduction recommendations for other projects.

4.6.6 Residual Impacts

Residual impacts associated with Greenhouse Gas Emissions are considered less than significant (Class III).

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