SECTION 4.9

Greenhouse Gas Emissions

4.6 GREENHOUSE GAS EMISSIONS

4.6.1 Existing Setting

The project site is located approximately 1.5 miles from the coastline, at an elevation of approximately 20 to 30 feet (approximately 6 to 9 meters) above mean sea level. The area of new development (100 condominium units) is currently vacant.

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. As 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. The absorbed radiation is then emitted from the earth as low-frequency infrared radiation. Because the frequencies at which bodies emit radiation are proportional to their temperature, the earth, which has a much lower temperature than the sun, emits radiation at a lower frequency than incoming solar radiation. While most solar radiation is not absorbed by GHGs, infrared radiation emitted by the earth can be absorbed by these gases. 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. Without the greenhouse effect, earth would not be able to support "life" as we know it.

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. It is extremely unlikely that global climate change of the past 50 years can be explained without the contribution from human activities.[1]

Climate change is a global problem. GHGs are global pollutants, unlike criteria pollutants and toxic air contaminants (TACs), which are pollutants of regional and local concern. Whereas criteria pollutants and TACs with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the world. 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 percent is sequestered within a year through ocean uptake, uptake by northern hemisphere boreal forest growth, and other terrestrial sinks, whereas the remaining 46 percent of human-caused CO_2 emissions remains stored in the atmosphere.[2]

[1] IPCC (2008). National Greenhouse Gas Inventories Programme. http://www.ipcc-nggip.iges.or.jp/
[2] Seinfeld and Pandis (1998). Atmospheric Chemistry and Physics from Air Pollution to Climate Change.

Similarly, impacts of GHGs are borne globally, as opposed to localized air quality effects of criteria air pollutants and TACs. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; suffice it to say, 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. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

~~*Adaptation to*~~*Effects of Global 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.[3] 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 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 percent by the end of the 21st century.[4] A study cited in a report by the California Department of Water Resources projects that approximately 50 percent of the statewide snowpack will be lost by the end of the century.[5] 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 could also lead to increased potential for floods as water that would normally be held in the Sierra Nevada snowpack until a spring thaw, would instead become runoff, 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.[6] If this occurs, resultant effects could include increased coastal flooding, saltwater intrusion and disruption of wetlands.[7] 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.

Greenhouse Gas Emission Sources

The contribution of GHG emissions to global climate change is attributable in large part to human activities associated with the transportation, industrial/manufacturing, electric utility,

[3] IPCC (2008). National Greenhouse Gas Inventories Programme. http://www.ipcc-nggip.iges.or.jp/

[4] California Energy Commission (CEC) (2006), *Our Changing Climate: Assessing the Risks to California*. Publication CEC-500-2006-077.

[5] Knowles and Cayan (2002). Potential effects of global warming on the Sacramento/San Joaquin watershed and the San Francisco estuary. Geophysical Research Letters VOL. 29, 1891, 4 PP

[6] IPCC (2008). National Greenhouse Gas Inventories Programme. http://www.ipcc-nggip.iges.or.jp/

[7] California Energy Commission (CEC) (2006), *Our Changing Climate: Assessing the Risks to California*. Publication CEC-500-2006-077.

residential, commercial, and agricultural sectors.[8] In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation.[9] 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 has one of the largest economies in the world, and is consequently one of the larger emitters of GHGs. In 2004, California released 484 million metric tons (MMT) of carbon dioxide equivalent (CO_2e)[10] and is the 12th to 16th largest emitter of CO_2 in the world.[11]

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. 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 percent 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 percent) and the industrial sector (20 percent).[12]

California experienced a statewide GHG reduction from 464 MMT of CO_2e (gross) in 2000 to 457 MMT of CO_2e (gross) in 2009, a decrease of 1.5 percent. The 2009 levels are the lowest in the ten-year period, with the highest level 489 MMT of CO_2e experienced in 2007. Since 1990 GHG emissions have increased approximately 5.5 percent through 2009. A 5.8 percent decrease in emissions from 2008 through 2009 occurred, but has been attributed to the slower economy. This decreasing trend is also reflected in the national emissions decrease of 6.1 percent for the same period (CARB, 2011). For comparison, the national total GHG emissions in 2009 were 6,633 MMT of CO_2e (USEPA, 2011), of which California's emissions represents 6.9 percent.

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

[8] CARB (2009a). *Greenhouse Gas Reporting in a Cap-and-Trade Program-Background Information*. http://www.arb.ca.gov/cc/capandtrade/meetings/021809/summary.pdf

[9] CARB (2009a). *Greenhouse Gas Reporting in a Cap-and-Trade Program-Background Information*. http://www.arb.ca.gov/cc/capandtrade/meetings/021809/summary.pdf

[10] Ibid.

[11] California Energy Commission (CEC) (2006). Rules of Practice and Procedure and Power Plant Ssite Certification Regulations. Publication (CEC-140-2006-002).

[12] California Air Resources Board (CARB) (2008). Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act, Preliminary Draft Staff Proposal.

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 State 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, as required by CEQA by July 1, 2009. The Natural Resources Agency was required to certify or adopt those guidelines by January 1, 2010. Those guidelines were submitted, and on March 18, 2010 became effective. In relevant part, those guidelines in Section15126.4(c) 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:
>
> (1) measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision;
>
> (2) reductions in emissions resulting from a project through implementation of project features, project design, or other measures, such as those described in Appendix F;
>
> (3) off-site measures, including offsets that are not otherwise required, to mitigate a project's emissions;
>
> (4) measures that sequester greenhouse gases;
>
> (5) 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 Standards Code, California Code of Regulations, Title 24, Part 11 (CAL GREEN). Specific elements of the CAL GREEN Code include:

- 20 percent mandatory reduction in indoor water use, with voluntary goal standards for 30, 35, and 40 percent reductions;
- separate water meters for nonresidential buildings' indoor and outdoor water use, with a requirement for moisture-sensing irrigation systems for larger landscape projects;
- requiring diversion of 50 percent of construction waste from landfills, increasing voluntarily to 65 and 75 percent for new homes and 80 percent 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;
- requiring low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particle board.

On November 2, 2010, the Goleta City Council adopted CAL GREEN as the Green Building Code of the City, Chapter 15.12 of Title 15 of the Goleta Municipal Code. That action became effective January 1, 2011. ~~CAL GREEN~~The Green Building Code of the City 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. Also on November 2, 2010, the Goleta City Council adopted ~~an ordinance~~the Energy Efficiency Standards, Chapter 15.13 of Title 15 of the Goleta Municipal Code implementing ~~a~~ local building energy efficiency standards for the City that includes a "reach" goal of an additional 15% reduction in GHGs when compared to the California Code of Regulations Title 24 (2008) California Building Standards Code. The increased energy efficiency standards apply to new buildings or structures of any size, including the project.

4.6.2 Thresholds of Significance

As directed by SB 97 and noted above, the Natural Resources Agency adopted amendments to the CEQA Guidelines, which became effective on March 18, 2010. These new CEQA Guidelines provide regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents. According to the amendments made to Appendix G of the CEQA Guidelines, the project would have a significant impact if it 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.

The adopted CEQA amendments include the addition of Section 15064.4, which requires a Lead Agency to make a good-faith effort, based to the extent possible, on scientific and factual data, in order to describe, calculate, or estimate the amount of greenhouse gas emissions resulting from a project. The Lead Agency has discretion to determine 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; and
- 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 amendments call on Lead Agencies to establish significance thresholds for their respective jurisdictions. Currently, significance thresholds for GHG emissions have not been adopted by the City or the State of California. Establishment of thresholds at the state and/or local level has been a point of discussion and analysis by various agencies and boards (i.e., OPR, CARB, California Air Pollution Control Officers Association [CAPCOA]).

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.[13] These thresholds are summarized in **Table 4.6-1**.

Table 4.6-1
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/yr OR 4.6 MT CO_2e/SP*/yr (residents + employees)
Stationary Sources	10,000 MT CO_2e/yr
Plans	6.6 MT CO_2e/SP*/yr (residents + employees)
* SP = Service Population	

[13] Bay Area Air Quality Management District (BAAQMD) (2010). California Environmental Quality Act Air Quality Guidelines.

The BAAQMD thresholds are ~~is a~~ promulgated CEQA thresholds that have ~~has~~ undergone full public review and comment, with approval by the BAAQMD governing board, and technical support by BAAQMD staff. They have applied ~~It applies~~ to a nine-county portion of northern California consisting of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, the western portion of Solano, and the southern portion of Sonoma counties. The BAAQMD jurisdiction ~~It~~ extends from the urban core surrounding the San Francisco Bay to the pastoral and rural areas of Napa, Marin, Solano, and Sonoma counties. The BAAQMD GHG thresholds have applied ~~applies~~ to a nine county area of very diverse population and land use.

The BAAQMD GHG significance thresholds have ~~has~~ a strong regulatory and technical underpinning. They are ~~It is~~ based on substantial data, were ~~is~~ intended as ~~a~~ regulatory thresholds, and applied ~~applies~~ in some areas of the BAAQMD jurisdiction that resemble some land use patterns in the Goleta area. 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. Additionally, 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.[14] 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.

In March 2012, a court judgment determined that the BAAQMD GHG emissions thresholds of significance were not properly adopted under CEQA and cannot be readopted until compliance with CEQA occurs.[15] Nevertheless, thresholds of significance that are adopted or recommended by other public agencies or by experts may be considered as appropriate thresholds of significance. As previously explained, a significant amount of public and expert opinion and input went into the development of the BAAQMD thresholds of significance. Moreover, since adoption of these thresholds, there have been numerous expert opinions and evaluations of these thresholds, including the applicability within Santa Barbara County.

Accordingly, given that the City 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 would generally apply. Therefore, this analysis uses the BAAQMD threshold of significance for operational emissions of non-stationary sources as part of the threshold of significance to be analyzed for the project. There is no BAAQMD threshold of significance for construction emissions.

Based on the applicable thresholds for Willow Springs II, the project would result in a significant impact if it:

- G~~g~~enerates operational emissions in an amount more than 4.6 MT CO_2e/SP/yr (SP = service population, including residents and employees) and/or results in significant construction or operational GHG emissions based on a qualitative analysis.

[14] Santa Barbara County Planning and Development Department (2010). Memorandum entitled "Support for Use of Bay Area Air Quality Management District Greenhouse Gas Emissions Standards".
[15] Bay Area Air Quality Management District (BAAQMD) (2012). CEQA Guidelines, Updated April 13, 2012.

- Fails 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.

It is also noted that the use of the BAAQMD threshold does not imply that it is a threshold that the City has formally adopted or should adopt as a GHG emissions significance threshold.

4.6.3 Project Impacts

~~Given the global nature of climate change resulting from GHG emissions, GHG emission impacts are inherently cumulative in nature. As such, the determination of whether a project's GHG emissions impacts are significant depends on whether emissions would be a cumulatively considerable contribution to the significant cumulative impact. This is assessed in the following subsection.~~

~~4.6.4 Cumulative Impacts~~

Construction Emissions[16]

Emissions of GHGs during project construction have the potential to produce short-term impacts. ~~As stated above, T~~the City of Goleta has not adopted significance criteria for construction activities, and neither has the BAAQMD. Therefore, this analysis uses the qualitative approach to determining significance of the quantitative calculation of construction emissions.

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 Urban Emissions Model (URBEMIS) 2007 (version 9.2.4) air quality modeling software, which is the most current version available. The URBEMIS emissions reports are contained in Volume II, Appendix A of this EIR.

The reports show that the project will generate approximately 198 MT of CO_2~~2~~e during the construction period. ~~These~~ This level of emissions ~~are~~ is not considered significant because the emissions ~~they~~ would be temporary and finite in nature, the project construction activities will follow Best Management Practices, and the process by which the construction emissions are deemed to have a less than significant impact is consistent with the AB 32 Scoping Plan discussed earlier in the Existing ~~Regulatory~~ Setting, S~~s~~ection 4.6.1, under the Regulatory Framework~~.~~.

Operational Emissions[17]

Implementation of the project would contribute to long-term increases in GHGs as a result of traffic increases (mobile sources) and minor secondary fuel combustion emissions from space heating, etc. Development occurring as a result of the project would also result in secondary operational increases in GHG emissions as a result of electricity generation to meet project-

[16] Addresses Threshold~~s~~ of Significance (a) and (b)
[17] Addresses Thresholds of Significance (a) and (b)

related increases in energy demand. Electricity generation in California is mainly from natural gas-fired power plants. However, since California imports about 20 to 25 percent of its total electricity (mainly from the northwestern and southwestern states), GHG emissions associated with electricity generation could also occur outside of California.

For purposes of this analysis, project-related GHG emissions were aggregated into transportation and non-transportation sources. The transportation component is calculated and reported in the Urban Emissions Model (URBEMIS) 2007 computer model. The non-transportation sources require additional analysis, as shown below.

URBEMIS is the most consistently used model for estimating a project's direct impacts from GHG emissions. URBEMIS is designed to model emissions associated with development of urban land uses and attempts to summarize criteria air pollutants and CO_2 emissions that would occur during operation of new development. Section 4.2 *Air Quality* provides the analysis for air quality relative to criteria air pollutants that would occur during construction and operation of the project.

The URBEMIS model does not contain emission factors for GHGs other than CO_2, ~~except for methane form mobile sources, which is converted to CO_2e~~. This may not be a major problem since CO_2 is the most important GHG from land development projects.[18] It also constitutes approximately 84 percent of all GHG emissions in California and is considered a "reference gas" for relating the amount of heat absorbed to the level of GHGs emitted.

The URBEMIS model also does not calculate GHGs associated with consumption of energy produced off-site (indirect impacts) and may in some instances, result in the double counting of "linked" trips (i.e., the concept that a residential trip and a commercial trip are quite possibly the same trip, resulting in "double counting"). However, as noted above, this model is still considered appropriate. Therefore, the methodology used herein for quantifying GHG emissions relies upon the URBEMIS 2007 (version 9.2.4) air quality modeling software, which is the most current version available.

Project Non-Transportation Emissions

As mentioned above, long-term emissions associated with the operation of the project would include emissions from energy that is consumed off-site in order to service the project (such as at utility providers associated with the project's energy demands). These emissions are expected to be minor and incremental for projects of this scale, which would not require the construction of any new utility facility, and would not conflict with programs that utility providers have adopted in order to reduce GHG contributions. The project does not include fireplaces; therefore, the hearth emissions for GHG modeling are not included.

Estimated project energy use from non-transportation sources and CO_2~~(e)~~ emissions calculations, are summarized in **Table 4.6-2**. As shown, project-related CO_2~~(e)~~ emissions from these sources are estimated at 327.5 metric tons (MT) per year.

[18] California Air Pollution Control Officers Association (CAPCOA) (2008). CEQA & Climate Change.

Table 4.6-2
Annual Non-Transportation Consumption/Generation

Energy Use	Project Consumption[a] (100 dwelling units)	CO_2 Emissions Generated (MT/energy unit/year)	CO_2 (MT/yr)	CO_2(e) Conversion Factor[b]	Total (MT)
Electricity (MWHR)	584	0.286	167.1	1.002	167.4
Natural Gas (10^6 cu. ft.)	--	--	159.7[c]	1.0026	160.1
Total CO_2(e) MT					**327.5**

a. Santa Barbara County APCD, Scope and Content of Air Quality Sections in Environmental Documents, June 2010.
b. CO_2(e) Conversion Factors from California Climate Action Registry.
c. URBEMIS Annual Area Source Gas Emissions.

Project Transportation Emissions

Implementation of the project would contribute to transportation GHG emissions from mobile sources as a result of traffic increases. The project is predicted to generate 672 new trip ends per day (See Section 4.13 Traffic), with an associated Vehicle Miles Traveled (VMT) of 4,872. The URBEMIS model calculated project-related operational transportation CO_2 emissions would be 724 MT, which converts to 731 MT CO_2(e) annually.

Total Operational Emissions

Operational GHG emissions from the project are summarized in **Table 4.6-3**. The project's long-term operational GHG emissions would be 1,058.5 MT CO_2(e) annually. The annual GHG burden associated with the project is less than the adopted significance threshold of 1,100 MT /year of GHG emissions. As shown in Table 4.6-1, if annual emissions are less than 1,100 MT/year, or emissions are less than 4.6 MT/year/SP (service population, combined residents and employees), project-related GHG impacts are considered individually less than significant. The project is expected to accommodate 265 residents (2.65 persons per unit) and as such, would produce 3.99 MT/year/resident. The project is residential and does not include a commercial or industrial component that would add employees to the project's SP; therefore, the SP for the project would also be 265. This results in a project impact of 3.99 MT/year/SP of GHG emissions. This is below the adopted significance threshold of 4.6 MT CO_2e/year/SP. Both of the numerical thresholds for this project, including the 1,100 MT CO_2e/year threshold for the entire project, and the individual significance standard of 4.6 MT CO_2e/year/SP will therefore not be exceeded. Additionally, the process by which the operational emissions are deemed to have a less than significant impact is consistent with the AB 32 Scoping Plan and the project will be constructed in compliance with the Green Building Code of the City and the Energy Efficiency Standards, which are discussed earlier in the Existing Setting, Section 4.6.1, under the Regulatory Framework.

4.6.4 Cumulative Impacts[19]

~~While any~~ GHG impacts of the project and other projects in the area identified in Section 3.0 *Related Projects* would be incrementally cumulative~~,~~. However, these emissions represent a small percentage of California's 457 MMT of CO_2e in 2009, which was 6.9 percent of the 2009 national emissions of 6,633 MMT of CO_2e~~GHG emissions, which were estimated at 484 million metric tons of CO_2e in 2004~~.[20] ~~However~~, as the~~The~~ incremental impact of the project's operational emissions ~~are~~ is less than the threshold of 4.6 MT CO_2e/service population/year and based on a qualitative analysis both the operational and construction emissions are less than significant. Therefore, when the project impacts are combined with~~;~~ the ~~project's~~ GHG impacts of other projects in the area, the cumulative impact is not cumulatively considerable and is, therefore, ~~are considered~~ less than significant.

Table 4.6-3
Total Annual Project GHG Emissions

Emission Source	CO_2~~(e)~~ (MT)
Transportation	
Vehicle Miles Traveled (VMT)	731[a]
Non-Transportation	
Natural Gas	160.1
Electricity	167.4
Total (MT)	**1,058.5**
a. URBEMIS 2007, 1.011 conversion factor for CO_2 to CO_2(e).	

4.6.5 ~~Recommended~~ Mitigation Measures

Project~~-related~~ specific and cumulative GHG emissions would be less than significant. Therefore, no mitigation measures are required or recommended.

4.6.6 Residual Impact

Residual impacts associated with Greenhouse Gas Emissions would remain less than significant **(Class III).**

[19] Addresses Thresholds of Significance (a) and (b).
[20] CARB (2009~~a~~). *Greenhouse Gas Reporting in a Cap-and-Trade Program-Background Information*. http://www.arb.ca.gov/cc/capandtrade/meetings/021809/summary.pdf