4.6 GREENHOUSE GAS EMISSIONS

This section discusses the Project's potential impacts related to emissions of greenhouse gases (GHG) and global climate change. Traffic projections used in emissions estimates are based on the *Traffic, Circulation, and Parking Study* prepared by Associated Transportation Engineers (ATE) dated August 25, 2014. The traffic study is included as Appendix I to this EIR. Air quality model results and calculations are based on calculations completed by Dudek as part of the *Air Quality and Greenhouse Gas Emissions Analysis Technical Report and Heritage Ridge Project Pre-Construction Export Scenarios Air Quality and Greenhouse Gas Emissions Assessment Memorandum*, and are included as Appendix B.

4.6.1 Setting

a. Climate Change and Greenhouse Gases. Climate change, as defined by the Intergovernmental Panel on Climate Change (IPCC), refers to a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity. This usage differs from that in the United Nations Framework Convention on Climate Change (UNFCCC), where climate change refers to a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods. . The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic and other records. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming. One example being glaciers have steadily retreated across the globe during this period. However, scientists have observed acceleration in the rate of warming during the past 150 years. Per the United Nations Intergovernmental Panel on Climate Change (IPCC, 2014), the understanding of anthropogenic warming (i.e., warming that can be attributed to human activity) and cooling influences on climate has led to a high confidence (95 percent or greater chance) that the global average net effect of human activities has been the dominant cause of warming since the mid-20th century (IPCC, 2014).

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. Each IPCC assessment has used new projections of future climate change that have become more detailed as the models have become more advanced.

Man-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and sulfur hexafluoride (SF_6) (California Environmental Protection Agency [U.S. EPA], 2015). Different types of GHGs have varying global warming potentials (GWPs). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO_2e), and is the amount of a GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane has a GWP of 25, meaning its global warming effect is 25 times greater than carbon dioxide on a molecule per molecule basis (IPCC, 2007).

The accumulation of GHGs in the atmosphere regulates the Earth's temperature. Without the natural heat trapping effect of GHGs, Earth's surface would be about 34° C cooler (U.S EPA, 2015). However, it is believed that emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations. The following discusses the primary GHGs of concern.

Greenhouse Gases.

Carbon Dioxide. The global carbon cycle is made up of large carbon flows and reservoirs. Billions of tons of carbon in the form of CO_2 are absorbed by oceans and living biomass (aka, carbon sinks) and are emitted to the atmosphere through natural sources. When in equilibrium, carbon fluxes among these various reservoirs are roughly balanced (United States Environmental Protection Agency [U.S. EPA], April 2014). CO_2 was the first GHG demonstrated to be increasing in atmospheric concentration, with the first conclusive measurements being made in the second half of the 20th century. Concentrations of CO_2 in the atmosphere have risen approximately 40 percent since the industrial revolution. The global atmospheric concentration of CO_2 has increased from a pre-industrial value of about 280 parts per million (ppm) to 391 ppm in 2011 (IPCC, 2007; Oceanic and Atmospheric Administration [NOAA], 2010). The average annual CO_2 concentration growth rate was larger between 1995 and 2005 (average: 1.9 ppm per year) than it has been since the beginning of continuous direct atmospheric measurements (1960–2005 average: 1.4 ppm per year), although there is year-to-year variability in growth rates (NOAA, 2010). Currently, CO_2 represents an estimated 74 percent of total GHG emissions (IPCC, 2007). The largest source of CO_2 emissions, and of overall GHG emissions, is fossil fuel combustion.

Methane. Methane (CH_4) is an effective absorber of radiation, though its atmospheric concentration is less than that of CO_2 and its lifetime in the atmosphere is limited to 10 to 12 years. It has a GWP approximately 25 times that of CO_2. Over the last 250 years, the concentration of CH_4 in the atmosphere has increased by 148 percent (IPCC, 2007), although emissions have declined from 1990 levels. Anthropogenic sources of CH_4 include enteric fermentation associated with domestic livestock, landfills, natural gas and petroleum systems, agricultural activities, coal mining, wastewater treatment, stationary and mobile combustion, and certain industrial processes (U.S. EPA, 2014).

Nitrous Oxide. Concentrations of nitrous oxide (N_2O) began to rise at the beginning of the industrial revolution and continue to increase at a relatively uniform growth rate (NOAA, 2014). N_2O is produced by microbial processes in soil and water, including those reactions that occur in fertilizers that contain nitrogen, fossil fuel combustion, and other chemical processes. Use of these fertilizers has increased over the last century. Agricultural soil management and mobile source fossil fuel combustion are the major sources of N_2O emissions. The GWP of nitrous oxide is approximately 298 times that of CO_2 (IPCC, 2007).

Fluorinated Gases (HFCS, PFCS, and SF_6). Fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfurhexafluoride (SF_6), are powerful GHGs that are emitted from a variety of industrial processes. Fluorinated gases are used as substitutes for ozone-depleting substances such as chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and halons, which have been regulated since the mid-1980s because of their ozone-destroying potential and are phased out under the Montreal Protocol (1987) and Clean Air Act Amendments of 1990. Electrical transmission and distribution systems account for most SF_6 emissions, while PFC emissions result from semiconductor manufacturing and as a by-product of primary aluminum production. Fluorinated gases are typically emitted in smaller quantities than CO_2, CH_4, and N_2O, but these compounds have much higher GWPs. SF_6 is the most potent GHG the IPCC has evaluated.

Greenhouse Gas Emissions Inventory. Worldwide anthropogenic emissions of GHGs were approximately 46,000 million metric tons (MMT, or gigatonne) CO_2e in 2010 (IPCC, 2014). CO_2 emissions from fossil fuel combustion and industrial processes contributed about 65 percent of total emissions in 2010. Of anthropogenic GHGs, CO_2 is the most abundant, accounting for 76 percent of total 2010 emissions. CH_4 emissions account for 16 percent of the 2010 total, while N_2O and fluorinated gases account for 6 and 2 percent respectively (IPCC, 2014).

Total U.S. GHG emissions were 6,525.6 MMT CO_2e in 2012 (U.S. EPA, 2014). Total U.S. emissions have increased by 4.7 percent since 1990; emissions decreased by 3.4 percent from 2011 to 2012 (U.S. EPA, 2014). The decrease from 2011 to 2012 was due to a decrease in the carbon intensity of fuels consumed to generate electricity due to a decrease in coal consumption, with increased natural gas consumption. Additionally, relatively mild winter conditions, especially in regions of the United States where electricity is important for heating, resulted in an overall decrease in electricity demand in most sectors. Since 1990, U.S. emissions have increased at an average annual rate of 0.2 percent. In 2012, the transportation and industrial end-use sectors accounted for 28.2 percent and 27.9 percent of CO_2 emissions (with electricity-related emissions distributed), respectively. Meanwhile, the residential and commercial end-use sectors accounted for 16.3 percent and 16.4 percent of CO_2 emissions, respectively (U.S. EPA, 2014).

Based upon the California Air Resources Board (ARB) California Greenhouse Gas Inventory for 2000-2012 (ARB, 2014), California produced 459 MMT CO_2e in 2012. The major source of GHG in California is transportation, contributing 36 percent of the state's total GHG emissions. Electric power is the second largest source, contributing 21 percent of the state's GHG emissions (ARB, 2014). The industrial sector accounted for approximately 19 percent of the total emissions. California emissions are due in part to its large size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. The ARB has projected statewide unregulated GHG emissions for the year 2020 will be 507 MMT CO_2e (ARB, 2013). These projections represent the emissions that would be expected to occur in the absence of any GHG reduction actions.

Potential Effects of Climate Change. Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21^{st} century than were observed during the 20^{th} century. Long-term trends have found that each of the past three decades has been warmer than all the previous decades in the instrumental record, and the decade from 2000 through 2010 has been the warmest. The global combined land and ocean temperature data show an increase of about 0.89°C (0.69°C–1.08°C) over the period 1901–2012 and about 0.72°C (0.49°C–0.89°C) over the period 1951–

2012 when described by a linear trend. Several independently analyzed data records of global and regional Land-Surface Air Temperature (LSAT) obtained from station observations are in agreement that LSAT as well as sea surface temperatures have increased. In addition to these findings, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades (IPCC, 2014).

According to the CalEPA's *2010 Climate Action Team Biennial Report*, potential impacts of climate change in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CalEPA, 2010). Below is a summary of some of the potential effects that could be experienced in California as a result of climate change.

Sea Level Rise. According to *The Impacts of Sea-Level Rise on the California Coast*, prepared by the California Climate Change Center (CCCC) (May 2009), climate change has the potential to induce substantial sea level rise in the coming century. The rising sea level increases the likelihood and risk of flooding. Sea levels are rising faster now than in the previous two millennia, and the rise is expected to accelerate, even with robust GHG emission control measures. The most recent IPCC report (2014) predicts a mean sea–level rise of 11-38 inches by 2100. This prediction is more than 50 percent higher than earlier projections of 7-23 inches, when comparing the same emissions scenarios and time periods. The previous IPCC report (2007) identified a sea level rise on the California coast over the past century of approximately eight inches. Based on the results of various climate change models, sea level rise is expected to continue. The California Climate Adaptation Strategy (December 2009) estimates a sea level rise of up to 55 inches by the end of this century.

Air Quality. Higher temperatures, which are conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (California Energy Commission [CEC], March, 2009).

Water Supply. Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future water supplies in California. However, the average early spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage. During the same period, sea level rose eight inches along California's coast. California's temperature has risen 1°F, mostly at night and during the winter, with higher elevations experiencing the highest increase. Many Southern California cities have experienced their lowest recorded annual precipitation twice within the past decade. In a span of only two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR], 2008; CCCC, May 2009).

This uncertainty complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The Sierra snowpack provides the majority of California's water supply by accumulating snow during the state's wet winters and releasing it slowly during the state's dry springs and summers. Based upon historical data and modeling DWR projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050. Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack (DWR, 2008).

Hydrology. As discussed above, climate change could potentially affect: the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. The rate of increase of global mean sea levels over the 2001-2010 decade, as observed by satellites, ocean buoys and land gauges, was approximately 3.2 mm per year, which is double the observed 20^{th} century trend of 1.6 mm per year (World Meteorological Organization [WMO], 2013). As a result, sea levels averaged over the last decade were about 8 inches higher than those of 1880 (WMO, 2013). Sea level rise may be a product of climate change through two main processes: expansion of sea water as the oceans warm and melting of ice over land. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply due to salt water intrusion. Increased CO_2 emissions can cause oceans to acidify due to the carbonic acid it forms. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture. California has a $30 billion annual agricultural industry that produces half of the country's fruits and vegetables. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater air pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (CCCC, 2006).

Ecosystems and Wildlife. Climate change and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists project that the average global surface temperature could rise by 1.0-4.5°F (0.6-2.5°C) in the next 50 years, and 2.2-10°F (1.4-5.8°C) in the next century, with substantial regional variation. Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan, August 2006).

According to the Center for Ocean Solutions, potential impacts from sea level rise on coastal communities, such as those in Santa Barbara County, include: coastal erosion, coastal inundation, the intrusion of salt water into fresh water, and increased frequency and intensity of storms and waves. Unlike flooding events that can be short lived, erosion can cause greater and potentially permanent damage. Coastal erosion will increase as global sea levels continue to rise. Higher sea levels will allow waves and tides to travel farther inland, exposing beaches, cliffs and coastal dunes to more persistent erosion forces. Erosion is not a new issue in California but rising sea levels threaten to increase the severity and frequency of erosion damage to coastal infrastructure and property.

b. Regulatory Setting. The following regulations address climate change and GHG emissions.

International Regulations. The United States is, and has been, a participant in the United Nations Framework Convention on Climate Change (UNFCCC) since it was produced in 1992. The UNFCCC is an international environmental treaty with the objective of, "stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." This is generally understood to be achieved by stabilizing global GHG concentrations between 350 and 400 ppm, in order to limit the global average temperature increases between 2 and 2.4°C above pre-industrial levels (IPCC, 2007). The UNFCCC itself does not set limits on GHG emissions for individual countries or enforcement mechanisms. Instead, the treaty provides for updates, called "protocols," that would identify mandatory emissions limits.

Five years later, the UNFCCC brought nations together again to draft the *Kyoto Protocol* (1997). The Kyoto Protocol established commitments for industrialized nations to reduce their collective emissions of six GHGs (CO_2, CH_4, N_2O, SF_6, HFCs, and PFCs) to 5.2 percent below 1990 levels by 2012. The United States is a signatory of the Kyoto Protocol, but Congress has not ratified it and the United States has not bound itself to the Protocol's commitments (UNFCCC, 2007). The first commitment period of the Kyoto Protocol ended in 2012. Governments, including 38 industrialized countries, agreed to a second commitment period of the Kyoto Protocol beginning January 1, 2013 and ending either on December 31, 2017 or December 31, 2020, to be decided by the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol at its seventeenth session (UNFCCC, November 2011).

In Durban (17th session of the Conference of the Parties in Durban, South Africa, 2011), governments decided to adopt a universal legal agreement on climate change. Work began on that task immediately under a new group called the Ad Hoc Working Group on the Durban Platform for Enhanced Action. Progress was also made regarding the creation of a Green Climate Fund (GCF) for which a management framework was adopted (UNFCCC, 2011; United Nations, 2011).

In December 2015, the 21st session of the Conference of the Parties (COP21) adopted the Paris Agreement. The deal requires all countries that ratify it to commit to cutting greenhouse gas emissions, with the goal of peaking greenhouse gas emissions "as soon as possible" (Worland, 2015). The agreement includes commitments to (1) achieve a balance between sources and sinks of greenhouse gases in the second half of this century; (2) to keep global temperature increase "well below" 2 degrees Celsius (C) or 3.6 degrees Fahrenheit (F) and to pursue efforts to limit it to 1.5 C; (3) to review progress every five years; and (4) to spend $100 billion a year in climate finance for developing countries by 2020 (UNFCCC, 2015). The agreement includes both legally binding measures, like reporting requirements, as well as voluntary or non-binding measures while, such as the setting of emissions targets for any individual country (Worland, 2015).

Federal Regulations. The United States Supreme Court in *Massachusetts et al. v. Environmental Protection Agency et al*. ([2007] 549 U.S. 05-1120) held that the U.S. EPA has the authority to regulate motor-vehicle GHG emissions under the federal Clean Air Act.

The U.S. EPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions. The first annual reports for these sources were due in March 2011.

On May 13, 2010, the U.S. EPA issued a Final Rule that took effect on January 2, 2011, setting a threshold of 75,000 tons CO_2e per year for GHG emissions. New and existing industrial facilities that meet or exceed that threshold will require a permit after that date. On November 10, 2010, the U.S. EPA published the "PSD and Title V Permitting Guidance for Greenhouse Gases." The U.S. EPA's guidance document is directed at state agencies responsible for air pollution permits under the Federal Clean Air Act to help them understand how to implement GHG reduction requirements while mitigating costs for industry. It is expected that most states will use the U.S. EPA's new guidelines when processing new air pollution permits for power plants, oil refineries, cement manufacturing, and other large pollution point sources.

On January 2, 2011, the U.S. EPA implemented the first phase of the Tailoring Rule for GHG emissions Title V Permitting. Under the first phase of the Tailoring Rule, all new sources of emissions are subject to GHG Title V permitting if they are otherwise subject to Title V for another air pollutant and they emit at least 75,000 tons CO_2e per year. Under Phase 1, no sources were required to obtain a Title V permit solely due to GHG emissions. Phase 2 of the Tailoring Rule went into effect July 1, 2011. At that time new sources were subject to GHG Title V permitting if the source emits 100,000 tons CO_2e per year, or they are otherwise subject to Title V permitting for another pollutant and emit at least 75,000 tons CO_2e per year.

On July 3, 2012, the U.S. EPA issued the final rule that retains the GHG permitting thresholds that were established in Phases 1 and 2 of the GHG Tailoring Rule. These emission thresholds determine when Clean Air Act permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities.

California Regulations. California Air Resources Board (ARB) is responsible for the coordination and oversight of State and local air pollution control programs in California. California has a numerous regulations aimed at reducing the state's GHG emissions. These initiatives are summarized below.

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires ARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, U.S. EPA granted the waiver of Clean Air Act preemption to California for its GHG emission standards for motor vehicles beginning with the 2009 model year. Pavley I took effect for model years starting in 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" will cover 2017 to 2025. Fleet average emission standards would reach 22 percent reduction from 2009 levels by 2012 and 30 percent by 2016. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles (LEV), Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs and would provide major reductions in GHG emissions. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels (ARB, 2011).

In 2005, Executive Order (EO) S-3-05 established statewide GHG emissions reduction targets. EO S-3-05 provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent below 1990 levels (CalEPA, 2006). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA, 2006). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These are strategies that could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, etc. In April 2015 Governor Brown issued EO B-30-15, calling for a new target of 40 percent below 1990 levels by 2030.

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006," signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 (essentially a 15 percent reduction below 2005 emission levels; the same requirement as under S-3-05), and requires ARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires ARB to adopt regulations to require reporting and verification of statewide GHG emissions.

After completing a comprehensive review and update process, ARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO_2e. The Scoping Plan was approved by ARB on December 11, 2008, and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted over the last five years. Implementation activities are ongoing and ARB is currently the process of updating the Scoping Plan.

In May 2014, ARB approved the first update to the AB 32 Scoping Plan. The 2013 Scoping Plan update defines ARB's climate change priorities for the next five years and sets the groundwork to reach post-2020 goals set forth in EO S-3-05. The update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluates how to align the State's longer-term GHG reduction strategies with other State policy priorities, such as for water, waste, natural resources, clean energy and transportation, and land use (ARB, 2015).

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in CEQA documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

ARB Resolution 07-54 establishes 25,000 MT of GHG emissions as the threshold for identifying the largest stationary emission sources in California for purposes of requiring the annual reporting of emissions. This threshold is just over 0.005 percent of California's total inventory of GHG emissions for 2004.

Senate Bill (SB) 375, signed in August 2008, enhances the state's ability to reach AB 32 goals by directing ARB to develop regional GHG emission reduction targets to be achieved from vehicles for 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPO) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On September 23, 2010, ARB adopted final regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. The Santa Barbara County Association of Governments (SBCAG) was assigned targets of zero net growth in per capita emissions from passenger vehicles in the 2020 and 2035 target years. The SBCAG 2040 Regional Transportation Plan and Sustainable Communities Strategy (August 15, 2013) demonstrated that the SBCAG region would achieve its regional emissions reduction targets for the 2020 and 2035 target years.

In April 2011, Governor Brown signed SB 2X requiring California to generate 33 percent of its electricity from renewable energy by 2020.

For more information on the Senate and Assembly Bills, Executive Orders, and reports discussed above, and to view reports and research referenced above, please refer to the following websites: www.climatechange.ca.gov and www.arb.ca.gov/cc/cc.htm.

California Environmental Quality Act. Pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the *State CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted *CEQA Guidelines* provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, the Bay Area Air Quality Management District (BAAQMD), the South Coast Air Quality Management District (SCAQMD), the San Luis Obispo Air Pollution Control District (SLOAPCD), and the San Joaquin Air Pollution Control District (SJVAPCD) have adopted quantitative significance thresholds for GHGs.

Local Regulations. In July 2014, the City of Goleta adopted a Final Climate Action Plan (CAP) to assist the City with reducing GHG emissions consistent with AB 32. The CAP identified emission reduction measures (measures) that would enable the City to meet the GHG reduction target for 2020. The CAP is a strategic document which outlines a framework to reduce community GHG emissions by 2020 and 2030 in a manner that meets the intent of CE-1A-5 and is supportive of AB 32 and Executive Order S-3-05, and serves as a Qualified GHG Reduction Strategy consistent with State CEQA Guidelines. The CAP does not, however, include quantitative significance thresholds for area sources. Instead, it outlines a programmatic approach to review new development. Any project-specific environmental document that relies on the CAP for its cumulative impacts analysis must identify specific measures applicable to the project and demonstrate the project's incorporation of the measures. The CAP includes the following reduction categories of GHG sources and associated reduction measures:

- *The Building Energy measures aim to reduce GHG emissions by improving the energy efficiency of both new and existing residential and commercial buildings, planting new trees in the City through the Urban Forest Management Plan, and improving communitywide understanding of energy management;*
- *The Renewable Energy measures aim to increase the use of renewable energy to power both new and existing residential and commercial buildings, encourage solar-ready buildings, and pursue a community choice aggregation program;*
- *The On-Road Transportation and Land Use measures focus on reducing emissions by reducing vehicle miles traveled (VMT) through multimodal transportation options, and reducing emissions by supporting design guidelines that will result in more compact, walkable, and transit accessible neighborhoods;*
- *The Water Consumption measure aims to reduce water demand and conserve water, whereby saving energy and avoiding associated emissions under the water energy nexus;*

- *The Off-Road Transportation and Equipment measure aims to increase the use of alternative fuels in construction and landscaping off-road equipment and vehicles and reduce the consumption of fossil fuels;*
- *The Solid Waste measure focuses on reducing emissions by diverting waste from landfills, and supports continual improvement in equipment and operations for landfill management (SBCAG, 2012); and*
- *Municipal measures aim to reduce GHG emissions by improving City operations.*

All new residential and commercial buildings must comply with Goleta Municipal Code Chapter 15.13 entitled "Energy Efficiency Standards," which require energy savings measures that exceed 2008 State of California Title 24 Energy Requirements by 15 percent, and with the 2010 California Green Building Code, as adopted by Goleta Municipal Code Chapter 15.12.

4.6.2 Impact Analysis

a. Methodology and Significance Thresholds. This section describes how the potential for Project-generated greenhouse gas impacts were determined. Air quality model results and calculations are based on calculations completed by Dudek as part of the *Air Quality and Greenhouse Gas Emissions Analysis Technical Report and Heritage Ridge Project Pre-Construction Export Scenarios Air Quality and Greenhouse Gas Emissions Assessment Memorandum*, and are included as Appendix B.

Significance Thresholds. Based on Appendix G of the *State CEQA Guidelines*, impacts related to GHG emissions from the Project would be significant if the Project would:

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

The vast majority of individual projects do not generate sufficient GHG emissions to create a project-specific impact through a direct influence to climate change; therefore, the issue of climate change typically involves an analysis of whether a project's contribution towards an impact is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (State CEQA Guidelines, Section 15355).

The significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds, or consistency with a regional GHG reduction plan (such as a Climate Action Plan). Neither the SBCAPCD nor the City of Goleta has adopted quantitative GHG emissions thresholds for area sources; however, as discussed in Section 4.6.1(b), the City recently adopted a CAP that identified measures that would enable the City to meet the GHG reduction target for 2020 consistent with AB 32. Therefore, the Project is analyzed for consistency with the adopted CAP. In addition, in order to provide a quantitative evaluation of the significance from anticipated GHG emissions associated with the Project, the anticipated GHG emissions from the Project are also compared to the San Luis Obispo Air Pollution Control District (SLOAPCD) Greenhouse Gas Thresholds, as adopted in 2012. The SLOAPCD GHG thresholds are the most recently adopted quantitative thresholds for area sources in the SCCAB, and as such, are an appropriate comparison for the Project.

Based on the adopted SLOPACD methodology, three thresholds can be used to evaluate the level of significance of GHG emissions impacts for residential and commercial projects. The three thresholds are summarized in Table 4.6-1.

Table 4.6-1
SLOPCD GHG Significance Determination Criteria

GHG Emission Source Category	Operational Emissions
Commercial and Residential Projects	Compliance with Qualified GHG Reduction Strategy or Bright-Line Threshold of 1,150 MT of CO_2e/yr or Efficiency Threshold of 4.9 MT CO_2e/SP[1]/yr

1. SP = Service Population (residents + employees)

A per-service population threshold is intended to avoid penalizing large projects that incorporate GHG-reduction measures such that they may have high total annual GHG emissions, but would be relatively efficient, as compared to projects of similar scale. This guideline is most appropriately used for residential or commercial projects that would generate a large service population (defined as the sum of new residents and new employees that would result from a project). The Project is a 360-unit residential development. As such, the per-service population threshold is most applicable to the Project. Therefore, the Project would have a potentially significant contribution to GHG emissions if it would result in greater than 4.9 MT of CO_2e/year per service population.

Study Methodology. Calculations of CO_2, CH_4, and N_2O emissions are provided to identify the magnitude of potential project effects. The analysis focuses on CO_2, CH_4, and N_2O because these make up 98.9 percent of all GHG emissions by volume (IPCC, 2007) and are the GHG emissions that the Project would emit in the largest quantities. Fluorinated gases, such as HFCs, PFCs, and SF_6, were also considered for the analysis. However, because the Project is a residential development, the quantity of fluorinated gases would not be significant since fluorinated gases are primarily associated with industrial processes. Emissions of all GHGs are converted into their equivalent weight in CO_2 (CO_2e). Minimal amounts of other main GHGs (such as chlorofluorocarbons [CFCs]) would be emitted, but these other GHG emissions would not substantially add to the calculated CO_2e amounts. Calculations are based on the methodologies discussed in the California Air Pollution Control Officers Association (CAPCOA) *CEQA and Climate Change* white paper (January 2008) and included the use of the California Climate Action Registry (CCAR) General Reporting Protocol (January 2009).

On-Site Operational Emissions. Operational emissions from energy use (electricity and natural gas use) for the Specific Plan area were estimated using the California Emissions Estimator Model (CalEEMod) computer program (Dudek, 2014; see Appendix B for calculations). The default values included in the CalEEMod computer program are based on the California Energy Commission (CEC) sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies. CalEEMod provides operational emissions of CO_2, N_2O, and CH_4. This methodology is considered reasonable and reliable for use, as it has been subjected to peer review by numerous public and private stakeholders, and in particular by the CEC. It is also recommended by CAPCOA (January 2008).

Emissions associated with area sources, including consumer products, landscape maintenance, and architectural coating were calculated in CalEEMod based on standard emission rates from CARB, USEPA, and district supplied emission factor values (CalEEMod User Guide, 2011).

Emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste (CalEEMod User Guide, 2011). Waste disposal rates by land use and overall composition of municipal solid waste in California was primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle).

Emissions from water and wastewater usage calculated in CalEEMod were based on the default electricity intensity from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Northern and Southern California.

Direct Emissions from Mobile Combustion. Emissions of CO_2 and CH_4 from transportation sources were quantified using CalEEMod (Dudek, 2014). Because CalEEMod does not calculate N_2O emissions from mobile sources, N_2O emissions were quantified by Rincon Consultants outside of the *Air Quality and Greenhouse Gas Emissions Analysis Technical Report and Heritage Ridge Project Pre-Construction Export Scenarios Air Quality and Greenhouse Gas Emissions Assessment Memorandum* prepared by Dudek, using the California Climate Action Registry General Reporting Protocol (January 2009) direct emissions factors for mobile combustion (see Appendix B for calculations). The estimate of total daily trips associated with the Project area was based the Traffic, Circulation, and Parking Study prepared for the Project by Associated Transportation Engineers (ATE, 2014). The traffic analysis developed trip generation estimates using rates contained in the ninth edition of the Institute of Transportation Engineers (ITE) Trip Generation report and traffic counts conducted at the existing nearby Willow Springs I apartment complex. For the senior housing, the trip generation was based on the ITE rates for Senior Adult Housing (ITE Land Use Code 252), which is 3.44 trips per unit per day. For the workforce housing, the trip generation was based on the ITE Apartment rates (ITE Land Use Code 220), which is 6.65 trips per unit per day. For the neighborhood park, the CalEEMod default trip rate for a City Park was assumed, which is 1.59 trips per acre per day. Emission rates for N_2O emissions were calculated based on the vehicle mix output generated by CalEEMod and the emission factors found in the California Climate Action Registry General Reporting Protocol.

Construction Emissions. Although construction activity is addressed in this analysis, CAPCOA does not discuss whether any of the suggested threshold approaches (as discussed below in *GHG Cumulative Significance*) adequately address impacts from temporary construction activity. As stated in the *CEQA and Climate Change* white paper, "more study is needed to make this assessment or to develop separate thresholds for construction activity" (CAPCOA, 2008). Nevertheless, air districts such as the SCAQMD (2011) have recommended amortizing construction-related emissions over a 30-year period in conjunction with the Project's operational emissions.

Construction of the Project would generate temporary GHG emissions primarily associated with the use of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. Site preparation and grading typically generate the greatest amount of emissions due to the use of grading equipment and soil hauling. Emissions associated with the construction period were estimated using CalEEMod, based on the projected maximum amount of equipment that would be used on-site at one time. Complete results from CalEEMod and assumptions can be viewed in Appendix B.

For the purpose of this analysis, construction activity was assumed to occur in two phases; the first phase would include pre-construction export of excess soil over 24-27 weeks, and the second phase would include construction of the Project which would occur over a period of approximately 30 months. Soil is currently stockpiled in two locations on the site and is estimated to total 115,000 cubic yards (CY). The excess soil would be transported off-site prior to construction by haul trucks ranging in capacity from 9 to 20 CY. These unique scenarios were modeled in the *Heritage Ridge Project Pre-Construction Export Scenarios Air Quality and Greenhouse Gas Emissions Assessment* that was completed for the Project (Dudek, 2015). Vehicle trips were based on the trip rates provided in the *North Willow Springs Project Traffic, Circulation, and Parking Study* (ATE, 2014). The Project has an increased density of 22.2 dwelling units/acre, based on the combined proposed 360 units in eight buildings. In addition, the Project would use water-efficient irrigation systems on-site (Dudek, 2014). All other values utilized in the modeling were based on applicable SBCAPCD defaults for the SCCAB.

b. Project Impacts and Mitigation Measures.

Impact GHG-1 The Project would generate temporary as well as operational GHG emissions, which would incrementally contribute to climate change. However, combined annual GHG emissions from the Project would not exceed applicable thresholds of significance. Impacts would be Class III, *less than significant [Threshold 1]*.

Construction Emissions. For the purpose of this analysis, construction activity is assumed to occur over a period of approximately 30 months. The construction analysis also includes a discussion of pre-construction soil export activity, which would occur prior to the main construction phase, to remove excess stockpiled soil and prepare the site for construction of the Project. Pre-construction export is outlined in two separate Scenarios (Scenario 1 and 2) as described in Section 4.2, *Air Quality*. Scenario 1 assumes that the existing stockpiled material would be removed using 9-CY trucks, which would require a total of 25,556 one-way haul truck trips; under Scenario 2, it is assumed that 20-CY trucks would be used to haul the material, resulting in approximately 11,500 one-way haul truck trips.

As shown in Table 4.6-2, construction activity for the Project would generate an estimated 1,661 MT CO_2e under Scenario 1 or 1,482 MT CO_2e under Scenario 2. Following the SLOAPCD's recommended methodology to amortize emissions over a 50-year period (the assumed life of the Project), construction of the Project would generate an estimated 33 MT of CO_2e per year under Scenario 1 or 30 MT of CO_2e per year under Scenario 2.

Table 4.6-2
Estimated Construction Emissions of Greenhouse Gases

Year	MT CO_2	MT CH_4	MT N_2O[1]	MT CO_2e
Project Construction Emissions				
Year 1	326	<0.1	<0.1	328
Year 2	461	<0.1	<0.1	463
Year 3	231	<0.1	<0.1	232
Subtotal	**1,018**	**<0.2**	**<0.1**	**1,023**
Pre-construction Export Emissions				
Scenario 1	638	<0.1	7.9	646
Scenario 2	458	<0.1	3.6	462
Scenario 1 Combined Total	**1,656**	**<0.2**	**7.9**	**1,661**
Amortized over 50 Years	33	<0.1	0.2	33
Scenario 2 Combined Total	**1,476**	**<0.2**	**3.6**	**1,482**
Amortized over 50 Years	30	<0.1	<0.1	30

See Appendix B for CalEEMod Results.
[1] The estimated N_2O emissions for Scenario 1 and 2 were calculated by Rincon and are included in the final emissions totals, and therefore may not match the Dudek Air Quality and Greenhouse Gas Emissions Analysis Technical Report.

Operational Indirect and Stationary Direct Emissions. Long-term emissions relate to area sources, energy use, solid waste, water use, and transportation. Each of these sources are discussed below, and associated GHG emissions were estimated using CalEEMod. Project sustainable design features described in Section 2.0, *Project Description*, would reduce GHG emissions associated with operational emissions. The sustainable design features associated with this project that have quantifiable reductions include:

- *Improved energy efficiency: project design would comply with updated 2013 Title 24 standards, which exceed CalEEMod default 2008 Title 24 standards by 25 percent (CEC, 2012);*
- *Minor reductions to motor vehicle emissions associated with the Project improvement of the pedestrian network and provision of traffic calming measures;*
- *Improved pedestrian network by connecting the Project and surrounding neighborhoods with pedestrian facilities contiguous with the Project site;*
- *Use of low VOC paint for residential interior and exterior; and*
- *Use of water-efficient irrigation systems.*

A full list of the Project sustainable design features can be found in Appendix B, the Dudek *Air Quality and Greenhouse Gas Analysis for the Heritage Ridge Project Report*.

Area Source Emissions. Direct sources of air emissions located at the Project site include consumer product use and landscape maintenance equipment. Area source emissions would be approximately 4 MT of CO_2e per year.

Energy Use. Operation of on-site development would consume both electricity and natural gas. The generation of electricity through combustion of fossil fuels typically yields CO_2, and to a smaller extent, N_2O and CH_4. As discussed above, annual electricity and natural gas emissions can be calculated using default values from the CEC sponsored CEUS and RASS studies which are built into CalEEMod. Electricity consumption associated with the Project would generate approximately 421 MT of CO_2e per year and natural gas use would generate approximately 172 MT of CO_2e per year (see Appendix B for full results and calculations). Thus, overall energy use at the Project site would generate approximately 593 MT of CO_2e per year.

Solid Waste Emissions. In accordance with AB 939, the CalEEMod emissions estimate assumes by default that the Project would achieve at least a 50 percent diversion rate of recyclable materials. Based on this estimate, solid waste associated with the Project would generate approximately 75 MT of CO_2e per year.

Water Use Emissions. Based on the amount of electricity used to supply and convey water for the Project, the Project would generate approximately 67 metric tons of CO_2e per year.

Transportation Emissions. Mobile source GHG emissions were estimated using the average daily trips for the Project according to the Project traffic study (see Appendix I). The Project would generate approximately 4,625,127 annual VMT. As noted above, CalEEMod does not calculate N_2O emissions related to mobile sources. Rincon estimated N_2O emissions and included these in the overall emissions total, based on the Project's VMT using calculation methods provided by the California Climate Action Registry General Reporting Protocol (January 2009). The Project would generate a total of approximately 1,857 MT CO_2e, associated with mobile emissions.

Combined Construction, Stationary, and Mobile Source Emissions. Table 4.6-3 shows the combined construction, operational indirect, and stationary direct GHG emissions associated with development of the Project.

Table 4.6-3
Combined Annual Emissions of Greenhouse Gases (2018)

Emission Source	**Annual Emissions (metric tons CO_2e)**	
	Scenario 1	**Scenario 2**
Project Construction	33	30
Project Operational *Area* *Energy* *Solid Waste* *Water*	 4 593 75 67	
Project Mobile *CO_2 and CH_4* *N_2O* [1]	 1,756 101	
Total Emissions from Project	*2,629 metric tons CO_2e*	*2,626 metric tons CO_2e*
Per Service Population Emissions	**3.4 metric tons CO_2e/SP** [2]	**3.4 metric tons CO_2e/SP** [2]

Sources: See Appendix B for calculations and for GHG emission factor assumptions.
1. Operational N_2O emissions were not calculated in the Air Quality and Greenhouse Gas Emissions Analysis Technical Report for the Heritage Ridge Project. Calculation sheets for N_2O mobile emissions are included in Appendix B.
2. SP = Service Population, defined as residents + employees. The Project would have approximately 776 residents.

As shown in Table 4.6-3, estimated annual operational indirect and stationary direct emissions, would be approximately 2,596 MT CO_2e per year. As described in Section 4.6.2(a), the service population is the sum of Project residents and employees. The service population for the workforce housing would be 629 persons based on the Department of Finance per-household figure of 2.76 persons per dwelling unit. The service population for the senior housing would be 147 persons, based on the *Heritage Ridge Occupant/Unit Ratio Analysis Study* conducted by The Towbes Group, Inc. which determined 1.11 persons per senior dwelling unit (The Towbes Group, Inc., 2014). The proposed residential development would not create substantial new employment, and potential employees associated with the rental office were not included in this analysis to provide a conservative population estimate (Dudek, 2014). The total service population for the Project would therefore be 776 persons. This equates to approximately 3.4 MT CO_2e/SP/year. GHG emissions associated with the Project would not exceed the 4.9 MT CO_2e/SP/year threshold of significance. Therefore, this impact would be less than significant.

Mitigation Measures. Mitigation is not required as emissions would not exceed significance thresholds.

Residual Impacts. Impacts would be less than significant without mitigation.

Impact GHG-2 The Project is consistent with the City of Goleta Climate Action Plan. Impacts would be Class III, *less than significant [Threshold 2]*.

As discussed under in Section 4.6.2(a), *Methodology and Significance Thresholds*, in July 2014, the City of Goleta adopted a CAP, which serves as a Qualified GHG Reduction Strategy consistent with *State CEQA Guidelines*. The CAP outlines a programmatic approach to review the potential from GHG-related impacts associated with new development. Any project-specific environmental document that relies on the CAP for its cumulative impacts analysis must identify specific measures applicable to the project and demonstrate the project's incorporation of the measures. Table 4.6-4 describes the Project's consistency with applicable CAP measures.

Table 4.6-4
Project Consistency with Applicable Climate Action Plan Measures

Strategy	***Project Consistency***
Building Energy Efficiency	
BEE-1 Continue implementation of the Residential and Commercial Building Code that Exceeds Title 24 Standards by 15 percent effective through Code Expiration (July 2014).	**Consistent** The Project would comply with and exceed the Chapter 15.13 Energy Efficiency Standards of the Goleta Municipal Code by also complying with the 2013 Energy Code, which is 25% better than the 2008 Energy Code standards referenced by the Municipal Code.
Renewable Energy	
RE-1 Continue Implementation of Ordinance Requiring Construction of Solar-Ready Buildings.	**Consistent** The Project would comply with the Green Building Ordinance (CALGreen+), and would therefore be solar-ready.
RE-4 Encourage Solar Installation in New Residential.	**Consistent** Buildings 4–6 are oriented primarily on an east–west axis to take advantage of solar orientation, thus encouraging solar installation in new residential buildings.
On-Road Transportation and Land Use	
T-1 Develop Design Guidelines for Increased Density for New Developments.	**Consistent** The Project is an increased density apartment complex development near U.S. 101, adjacent to South Los Carneros Road.
T-2 Implement General Plan Policy TE 11: Bikeways Plan.	**Consistent** The Project would implement General Plan Policy TE 11 by encouraging increased bicycle use through the installation of trails connecting the site to surrounding neighborhoods. In addition, bicycle parking would be provided on-site to encourage bicycle use.
T-8 Encourage Bicycle Parking through Development of Design Guidelines and Policies.	**Consistent** Bicycle parking would be provided on-site to encourage bicycle use and active transportation.
Off-road Transportation and Equipment	
WR-1 Continue Compliance with SB X7-7: Reduce Per Capita Urban Water Use	**Consistent** The Project would include incorporation of an efficient irrigation system, water-wise and California native landscaping, minimal recreational turf, and rainwater capture systems to assist the City with compliance with SB X7-7.

As indicated in Tables 4.6-4, the Project would be consistent with applicable CAP Strategies. The Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, and would therefore be consistent with the objectives of AB 32, EO S-3-05, SB 375, and SB 97. This impact would be less than significant.

Mitigation Measures. Mitigation is not required since the Project impact related to GHGs is less than significant.

Residual Impacts. Impacts would be less than significant without mitigation.

Cumulative Impacts. As shown in Tables 3-1 and 3-2 in Section 3.0, *Related Projects*, 1,511 residential units and more than 1.8 million square feet of non-residential development are approved or pending in and around Goleta. Such development would increase overall GHG emissions generated within Goleta. Similar to the Project, planned and pending projects in the City would be required to comply with applicable strategies contained in the Goleta CAP. As indicated in Impact GHG-1, GHG emissions associated with the Project were found to be less than significant. Analysis of GHG-related impacts is cumulative in nature as climate change is related to the accumulation of GHGs in the global atmosphere. Although cumulative increases in atmospheric GHGs may be significant, the Project's contribution to cumulative levels of GHGs is not cumulatively considerable since emissions associated with the Project would not exceed quantitative thresholds and the Project is consistent with all applicable plans and policies pertaining to GHG reduction.