

4.6 GREENHOUSE GAS EMISSIONS

This section discusses global climate change, its causes and the contribution of human activities, as well as a summary of existing greenhouse gas emissions. The section describes the criteria for determining the significance of climate change impacts, and analyzes the proposed Amendments' impacts related to global climate change and greenhouse gas emissions.

4.6.1 Setting

a. Climate Change and Greenhouse Gases. Global climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other significant changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. The term "global climate change" is often used interchangeably with the term "global warming," but "global 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 record. 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, as glaciers have steadily retreated across the globe. 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, 2007), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (90% or greater chance) that the global average net effect of human activities since 1750 has been one of warming. The prevailing scientific opinion on climate change is that most of the observed increase in global average temperatures, since the mid-20th century, is likely due to the observed increase in anthropogenic GHG concentrations (IPCC, 2007).

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change carbon dioxide (CO₂), methane (CH₄), nitrous oxides (N₂O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). 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, CO₂ and CH₄ are emitted in the greatest quantities from human activities. Emissions of CO₂ are largely by-products of fossil fuel combustion, whereas CH₄ results from off-gassing associated with agricultural practices and landfills. Man-made GHGs, many of which have greater heat-absorption potential than CO₂, include fluorinated gases and sulfur hexafluoride (SF₆) (California Environmental Protection Agency [CalEPA], 2006). Different types of GHGs have varying global warming potential (GWP). 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 (CO₂) is used to relate the amount of heat absorbed to the



amount of the gas emissions, referred to as “carbon dioxide equivalent” (CDE or CO₂E), and is the amount of a GHG emitted multiplied by its GWP. Carbon dioxide has a GWP of one. By contrast, methane (CH₄) has a GWP of 21, meaning its global warming effect is 21 times greater than CO₂ on a molecule per molecule basis.

The accumulation of GHG in the atmosphere regulates the earth’s temperature. Without the natural heat trapping effect of GHG, Earth’s surface would be about 34° C cooler (CalEPA, 2006). 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.

Carbon Dioxide. The global carbon cycle is made up of large carbon flows and reservoirs. Billions of tons of carbon in the form of CO₂ are absorbed by oceans and living biomass (i.e., sinks) and are emitted to the atmosphere annually through natural processes (i.e., sources). When in equilibrium, carbon fluxes among these various reservoirs are roughly balanced (U.S. Environmental Protection Agency [USEPA], April 2008). CO₂ was the first GHG demonstrated to be increasing in atmospheric concentration, with the first conclusive measurements being made in the last half of the 20th Century. Concentrations of CO₂ in the atmosphere have risen approximately 35% since the industrial revolution. Per the IPCC (2007), the global atmospheric concentration of CO₂ has increased from a pre-industrial value of about 280 parts per million (ppm) to 379 ppm in 2005. The atmospheric concentration of CO₂ in 2005 exceeds the natural range over the last 650,000 years (180 to 300 ppm) as determined from ice cores. The average annual CO₂ concentration growth rate was larger during the last 10 years (1995–2005 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. Currently, CO₂ represents an estimated 82.7% of total GHG emissions (Department of Energy [DOE] Energy Information Administration [EIA], December 2008). The largest source of CO₂, and of overall GHG emissions, is fossil fuel combustion.

Methane. CH₄ is an effective absorber of radiation, though its atmospheric concentration is less than that of CO₂ and its lifetime in the atmosphere is limited to 10 to 12 years. It has a GWP approximately 21 times that of CO₂ (refer to *Greenhouse Gas Inventory* below for a discussion of GWP). Over the last 250 years, the concentration of CH₄ in the atmosphere has increased by 148% (IPCC, 2007), although emissions have declined from 1990 levels. Anthropogenic sources of CH₄ 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 (USEPA, April 2008).

Nitrous Oxide. Concentrations of N₂O began to rise at the beginning of the industrial revolution. N₂O is produced by microbial processes in soil and water, including those reactions that occur in fertilizers that contain nitrogen. Use of these fertilizers has increased over the last century. Agricultural soil management and mobile source fossil fuel combustion are the major sources of N₂O emissions. N₂O’s GWP is approximately 310 times that of CO₂.

Fluorinated Gases (HFCS, PFCS and SF₆). Fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfurhexafluoride (SF₆), 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 SF₆ 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 CO₂, CH₄, and N₂O, but these compounds have much higher GWPs. SF₆ is the most potent GHG that the IPCC has evaluated.

b. Greenhouse Gas Inventory. Worldwide anthropogenic emissions of GHG were approximately 40,000 million metric tons (MMT) CDE in 2004, including ongoing emissions from industrial and agricultural sources, but excluding emissions from land use changes (i.e., deforestation, biomass decay) (IPCC, 2007). CO₂ emissions from fossil fuel use accounts for 56.6% of the total emissions of 49,000 million metric tons CDE (includes land use changes) and all CO₂ emissions are 76.7% of the total. CH₄ emissions account for 14.3% of GHG and N₂O emissions for 7.9% (IPCC, 2007).

Total U.S. GHG emissions were 7,282 million metric tons CDE in 2007 (DOE EIA, December 2008), or about 14% of worldwide GHG emissions. U.S. emissions rose by 16.7% from 1990 to 2007. The residential and commercial end-use sectors accounted for 17% and 15%, respectively, of CO₂ emissions from fossil fuel combustion in 2007 (DOE EIA, December 2008). Both sectors rely heavily on electricity for meeting energy demands, with 72% and 79%, respectively, of their emissions attributable to electricity consumption for lighting, heating, cooling, and operating appliances. The remaining emissions were due to the consumption of natural gas and petroleum for heating and cooking.

Based upon the California Air Resources Board (ARB) *California Greenhouse Gas Inventory for 2000-2008* (<http://www.arb.ca.gov/cc/inventory/data/data.htm>), California produced 478 MMT CDE in 2008. The major source of GHG in California is transportation, contributing 37% of the state's total GHG emissions. Electricity generation is the second largest source, contributing 24% of the state's GHG emissions (California Energy Commission [CEC], June 2010). California emissions are due in part to its large size and large population compared to other States. By contrast, California had the fourth lowest CO₂ emissions per capita from fossil fuel combustion in the country in 2004, due in part to the success of its energy-efficiency and renewable energy programs and commitments that have lowered the state's GHG emissions rate of growth by more than half of what it would have been otherwise (CEC, 2006). Another factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. ARB staff has projected statewide unregulated GHG emissions for the year 2020, which represent the emissions that would be expected to occur in the absence of any GHG reduction actions, will be 596 MMT CDE (ARB, 2007).

c. Effects of Global 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 21st century than were observed during the 20th century. A warming of about 0.2°C (0.36°F) per



decade is projected and there are identifiable signs that global warming could be taking place, including substantial ice loss in the Arctic (IPCC, 2007).

According to the CEC's Draft Climate Action Team Biennial Report, potential impacts in California of global warming 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 (CEC, March 2009). Below is a summary of some of the potential effects reported by an array of studies that could be experienced in California as a result of climate change.

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 (CEC, March 2009).

Water Supply. Uncertainty remains with respect to the overall impact of global climate change on future water supplies in California. Studies have found that, "considerable uncertainty about precise impacts of climate change on California hydrology and water resources will remain, until we have more precise and consistent information about how precipitation patterns, timing, and intensity will change" (California Department of Water Resources [DWR], 2006). For example, some studies identify little change in total annual precipitation in projections for California (California Climate Change Center [CCCC], 2006). Other studies show significantly more precipitation (DWR, 2006). Even assuming that climate change leads to long-term increases in precipitation, analysis of the impact of climate change is further complicated by the fact that no studies have identified or quantified the runoff impacts that such an increase in precipitation would have in particular watersheds (CCCC, 2006). Also, little is known about how groundwater recharge and water quality will be affected (Ibid.). Higher rainfall could lead to greater groundwater recharge, although reductions in spring runoff and higher evapotranspiration could reduce the amount of water available for recharge (Ibid.).

The California Department of Water Resources (DWR) (2006) report on climate change and effects on the State Water Project (SWP), the Central Valley Project, and the Sacramento-San Joaquin Delta concludes that "[c]limate change will likely have a significant effect on California's future water resources... [and] future water demand." DWR also reports that "much uncertainty about future water demand [remains], especially [for] those aspects of future demand that will be directly affected by climate change and warming. While climate change is expected to continue through at least the end of this century, the magnitude and, in some cases, the nature of future changes is uncertain" (DWR, 2006).

This uncertainty serves to complicate the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood (DWR, 2006). DWR adds that "[i]t is unlikely that this level of uncertainty will



diminish significantly in the foreseeable future.” Still, changes in water supply are expected to occur, and many regional studies have shown that large changes in the reliability of water yields from reservoirs could result from only small changes in inflows (Kiparsky, 2003; DWR, 2006; Cayan, 2006, Cayan, D., et al, 2006).

Hydrology. As discussed above, climate changes 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. 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. 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 agricultural industry that produces half of the country’s fruits and vegetables. Higher CO₂ 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 ozone 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 expect that the average global surface temperature could rise as discussed previously: 1.0-4.6°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. Sea level could rise as much as two feet along most of the U.S. coast. 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 (IPCC, 2007; Parmesan, 2004; Parmesan, C. and H. Galbraith, 2004).

While the above-mentioned potential impacts identify the possible effects of climate change at a global and potentially statewide level, in general scientific modeling tools are currently unable to predict what impacts would occur locally.

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

International and Federal Regulations. The United States is, and has been, a participant in the United Nations Framework Convention on Climate Change (UNFCCC) since it was produced by the United Nations in 1992. The objective of the treaty is “stabilization of greenhouse gas 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 greenhouse gas 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 greenhouse gas 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 Protocol established commitments for industrialized nations to reduce their collective emissions of six greenhouse gases (carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons) to 5.2% below 1990 levels by 2012. The United States is a signatory of the Protocol, but Congress has not ratified the it and the United States has not bound itself to the Protocol’s commitments (UNFCCC, 2007).

The United States is currently using a voluntary and incentive-based approach toward emissions reductions in lieu of the Kyoto Protocol’s mandatory framework. The Climate Change Technology Program (CCTP) is a multi-agency research and development coordination effort (led by the Secretaries of Energy and Commerce) that is charged with carrying out the President’s National Climate Change Technology Initiative (USEPA, December 2007; <http://www.epa.gov/climatechange/policy/cctp.html>).

The U.S. Supreme Court in *Massachusetts v. EPA* (April 2, 2007) held that the EPA can consider regulating motor-vehicle GHG emissions. EPA and the National Highway Traffic Safety Administration (NHTSA) are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. This will be done through coordination of the GHG emission limits and the NHTSA Corporate Average Fuel Economy (CAFE) standards. On May 7, 2010, the final combined EPA and NHTSA standards that comprise the first phase of this national program were promulgated regarding passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The CAFE standards require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon (MPG) if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. New emission limits and CAFE standards for light-duty vehicles for the 2017-2025 model years are currently (September 30, 2010) under development. In October 2010, the agencies each proposed complementary GHG and CAFE standards under their respective authorities covering medium and heavy-duty trucks for the model years 2014-2018.

The EPA in May 2010 finalized the GHG Tailoring Rule that specifies that beginning in 2011, projects that will increase GHG emissions substantially will require an air permit. Typical facilities that would be covered under this rule include power plants, industrial boilers, and oil refineries, which as a group are responsible for 70 percent of the GHGs from stationary sources. The applicability criteria to determine which sources are subject to permitting is being “tailored” to apply to GHGs, which are emitted at a much greater quantity than the more typical regulated air pollutants, and also have different consequences than the criteria pollutants. New sources as well as existing sources not already subject to Title V that emit, or have the potential to emit, at least 100,000 tons per year (tpy) CO_{2e} will become subject to the Prevention of Significant Deterioration (PSD) and Title V requirements. In addition, sources



that emit or have the potential to emit at least 100,000 tpy CO₂e and that undertake a modification that increases net emissions of GHGs by at least 75,000 tpy CO₂e will also be subject to PSD requirements.

California Regulations. Assembly Bill (AB) 1493 (2002), referred to as Pavley I, 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, EPA granted the waiver of Clean Air Act preemption to California for its greenhouse gas emission standards for motor vehicles beginning with the 2009 model year.

In 2005, Governor Schwarzenegger issued Executive Order S-3-05, establishing statewide GHG emissions reduction targets. Executive Order (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% of 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.

California’s major initiative for reducing GHG emissions is outlined in 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 25% 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, the ARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CDE. The Scoping Plan was approved by ARB on December 11, 2008, and includes measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. The Scoping Plan includes a range of GHG reduction actions that may include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms.

Executive Order S-01-07 was enacted on January 18, 2007. The order mandates that a Low Carbon Fuel Standard (“LCFS”) for transportation fuels be established for California to reduce the carbon intensity of California’s transportation fuels by at least 10% by 2020.

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in CEQA documents. In December 2009, 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 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.

SB 375, signed in August 2008, enhances the State's ability to reach AB 32 goals by directing ARB to develop regional greenhouse gas emission reduction targets to be achieved from vehicles for 2020 and 2035. 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 greenhouse gas emissions in 2020 and 2035.

ARB Resolution 07-54 establishes 25,000 metric tons 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% of California's total inventory of GHG emissions for 2004.

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 <http://www.arb.ca.gov/cc/cc.htm>.

Local Regulations and CEQA Requirements. Pursuant to the requirements of SB 97, the Resources Agency adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions and analysis of the effects of GHG emissions. The adopted CEQA Guidelines provide 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), and the San Joaquin Air Pollution Control District (SJVAPCD) have adopted significance thresholds for GHGs. The SCAQMD threshold, which was adopted in December 2008, considers emissions of over 10,000 metric tons CDE/year to be significant. However, the SCAQMD's threshold applies only to stationary sources and is expressly intended to apply only when the SCAQMD is the CEQA lead agency. Although not yet adopted, the SCAQMD has a recommended quantitative threshold for all land use types of 3,000 metric tons CDE/year (SCAQMD, "Proposed Tier 3 Quantitative Thresholds - Option 1", September 2010). Note that no air district has the power to establish definitive thresholds that will completely relieve a lead agency of the obligation to determine significance on a case-by-case basis for a specific project.

4.6.2 Impact Analysis

a. Methodology and Significance Thresholds. The State CEQA Guidelines are used in evaluating the cumulative significance of GHG emissions from the proposed project. As described by CEQA Guidelines Section 15064.4, a lead agency shall have discretion to determine, in the context of a particular project, whether to:

(1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model or methodology it considers most appropriate provided it supports its decision



with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; and/or

(2) Rely on a qualitative analysis or performance based standards.

Further, a lead agency should consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment:

(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;

(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.

(3) 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. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

Although this EIR is a programmatic EIR and the proposed landslide moratorium ordinance revisions would not involve any specific development proposals or change any land use designations, this section provides a quantitative analysis to estimate GHG emissions.

The vast majority of individual projects do not generate sufficient GHG emissions to create a project-specific impact through a direct influence to global 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 (CEQA Guidelines, Section 15355).

For future projects, 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). However, because the SCAQMD has not yet adopted GHG emissions thresholds that apply to land use projects where the SCAQMD is not the lead agency and no GHG emissions reduction plan or GHG emissions thresholds have been adopted in Rancho Palos Verdes, the proposed project is evaluated based on the SCAQMD's recommended/preferred option threshold for all land use types including residential of 3,000 metric tons CO_{2e} per year (SCAQMD, "Proposed Tier 3 Quantitative Thresholds - Option 1", September 2010). It is important to note that the City has not recommended that threshold for any other purpose at this time, but that numeric threshold is recommended for this analysis.

Although this EIR is a programmatic EIR, the development potential associated with the proposed revisions to the Landslide Moratorium Ordinance would have a significant impact



related to GHG emissions if the GHG emissions would result in more than 3,000 metric tons of carbon dioxide equivalent (CDE) units per year. In addition, in order to determine whether or not the proposed project's GHG emissions are "cumulatively considerable," this analysis determines the project's consistency with applicable greenhouse gas emissions reductions strategies.

Study Methodology. This analysis is based on the methodologies recommended by the California Air Pollution Control Officers Association [CAPCOA] (January 2008) *CEQA and Climate Change* white paper. The analysis focuses on CO₂, N₂O, and CH₄ as these are the GHG emissions that onsite development would generate in the largest quantities. Fluorinated gases, such as HFCs, PFCs, and SF₆, were also considered for the analysis. However, because the development potential would only involve residential development, the quantity of fluorinated gases would not be significant since fluorinated gases are primarily associated with industrial processes. Calculations were based on the methodologies discussed in the CAPCOA white paper (January 2008) and included the use of the California Climate Action Registry General Reporting Protocol (January 2009).

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, the SCAQMD has recommended amortizing construction-related emissions over a 30-year period in conjunction with the proposed project's operational emissions.

Construction of the 47 lots would generate temporary GHG emissions primarily due to the operation of construction equipment and truck trips. As discussed in Section 4.2, *Air Quality*, for the purposes of this analysis it was assumed that total grading would be approximately 47,000 cubic yards (approximately 1,000 cubic yards per lot) and the maximum amount of imported soil would be approximately 2,350 cubic yards (or 50 cubic yards per lot). Site preparation and grading typically generates the greatest amount of emissions due to the use of grading equipment and soil hauling. For construction analysis, it was assumed that all 47 lots would be developed by the year 2015. This is a conservative/worst case scenario assumption since individual lots would be developed independently and thus construction schedules would likely occur over many years. Emissions associated with the construction period were estimated using the California Emissions Estimator Model (CalEEMod) computer model, based on the projected maximum amount of equipment that would be used onsite at one time. Complete CalEEMod results and assumptions can be viewed in Appendix B.

Indirect Emissions. Operational emissions from energy use (electricity and natural gas use) for the 47 residences was estimated using the CalEEMod model (see Appendix B for calculations). The default values on which the CalEEMod model are based include the California Energy Commission (CEC) sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies. The CalEEMod model provides operational emissions of CO₂, N₂O and CH₄. 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, hearth, and architectural coating were calculated in the CalEEMod model and utilize standard emission rates from CARB, USEPA, and district supplied emission factor values (CalEEMod User Guide, 2011).

Emissions from waste generation were also calculated in the CalEEMod model 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 the CalEEMod model were based on the default electricity intensity is 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 CO₂ and CH₄ from transportation sources for the proposed project were quantified using the CalEEMod computer model. Because the CalEEMod model does not calculate N₂O emissions from mobile sources, N₂O emissions were quantified using the California Climate Action Registry General Reporting Protocol (January 2009) direct emissions factors for mobile combustion (see Appendix for calculations). Total daily trips for the 47 single family residences was based on the standard Institute of Transportation Engineers (ITE) rate for single family residences and was calculated and extrapolated to derive total annual mileage in CalEEMod. Emission rates for N₂O emissions were based on the vehicle mix output generated by CalEEMod and the emission factors found in the California Climate Action Registry General Reporting Protocol.

One of the limitations to a quantitative analysis is that emission models, such as CalEEMod, evaluate aggregate emissions and do not demonstrate, with respect to a global impact, what proportion of these emissions are "new" emissions, specifically attributable to the project in question. For most projects, the main contribution of GHG emissions is from motor vehicles and the total vehicle miles traveled (VMT), but the quantity of these emissions appropriately characterized as "new" is uncertain. Traffic associated with a project may be relocated trips from other locales, and consequently, may result in either higher or lower net VMT. For the proposed project analyzed in this report, it is likely that some of the GHG emissions associated with traffic and energy demand would be truly "new" emissions. However, it is also likely that some of the emissions represent diversion of emissions from other locations. Thus, although GHG emissions are associated with onsite development, it is not possible to discern how much diversion is occurring or what fraction of those emissions represents global increases. In the absence of information regarding the different types of trips, the VMT estimate generated by CalEEMod is used as a conservative, "worst-case" estimate.



b. Project Impacts and Mitigation Measures.

Impact GHG-1 Development that could be facilitated by the proposed ordinance revisions would generate additional GHG emissions beyond existing conditions. However, GHG emissions generated by full development potential within Zone 2 would not exceed relevant significance thresholds. Further, the proposed project would be generally consistent with the Climate Action Team GHG reduction strategies, the 2008 Attorney General Greenhouse Gas Reduction Measures and the CAPCOA GHG Model Policies Guide. Impacts would be Class III, *less than significant*.

As stated above, GHG emissions for potential buildout of the project area under the proposed ordinance revisions were calculated using the SCAQMD’s CalEEMod computer model based on the development potential that would be accommodated as a result of the proposed revisions to the Landslide Moratorium Ordinance. The following summarizes the project’s overall GHG emissions (see Appendix B for full CalEEMod worksheets).

Construction Emissions. For the purpose of this analysis, construction activity is conservatively assumed to occur over a period of approximately four years. Based on the CalEEMod model results, construction activity for the project would generate an estimated 753 metric tons of carbon dioxide equivalent (CDE) units (as shown in Table 1) during the first year of construction, which is the year with the highest amount of GHG emissions since this year includes site preparation and grading phases. As described above under Study Methodology, although construction emissions are temporary in nature, in order to account for their contribution over the lifetime of the project the SCAQMD recommends amortization of construction emissions over a 30-year period and then addition of the construction emissions to the operational emissions (SCAQMD, 2008). Following the SCAQMD’s recommended methodology to amortize emissions over a 30-year period (the assumed life of the project), construction of the proposed project would generate an estimated 25 metric tons of CDE per year.

**Table 4.6-1
 Estimated Construction Emissions of Greenhouse Gases**

Emission Source	Annual Emissions	
	Emissions (metric tons)	Carbon Dioxide Equivalent (CDE)
Carbon Dioxide (CO ₂) ¹	751.62	751.6 metric tons
Methane (CH ₄) ¹	0.08	1.7 metric tons
Nitrous Oxide (N ₂ O) ¹	0.0	0.0 metric tons
	Total	753.3 metric tons
	Amortized over 30 years	25.11 metric tons per year

¹ See Appendix B for calculations and for GHG emission factor assumptions.



Operational Indirect and Stationary Direct Emissions.

Area Source Emissions. The CalEEMod model was used to calculate direct sources of air emissions located at the project site. This includes hearths, consumer product use, and landscape maintenance equipment. Because the project would involve residential units which do not typically have large rates of emissions associated with consumer products, emissions from the proposed project associated with consumer products would be negligible (0 metric tons per year). As shown in Table 4.6-2, the area sources would generate approximately 36 metric tons CDE per year.

**Table 4.6-2
 Estimated Area Source Greenhouse Gas Emissions**

Emission Source	Annual Emissions (Carbon Dioxide Equivalent (CDE))
Hearth	34.31 metric tons
Landscaping	1.19 metric tons
Total	35.5 metric tons

Source: See Appendix B for calculations and for GHG emission factor assumptions.

Energy Use. Operation of the potential new residences would consume both electricity and natural gas (see Appendix B for calculations). The generation of electricity through combustion of fossil fuels typically yields CO₂, and to a smaller extent, N₂O and CH₄. 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 the CalEEMod model.

As shown in Table 4.6-3, electricity consumption associated with the project would generate approximately 206 metric tons CDE per year. Natural gas use would generate approximately 131 metric tons CDE per year. Thus, overall energy use at the project site would generate approximately 337 metric tons CDE per year.

**Table 4.6-3
 Estimated Annual Energy-Related Greenhouse Gas Emissions**

Emission Source	Annual Emissions (Carbon Dioxide Equivalent (CDE))
Electricity ¹	89 metric tons
Natural Gas ¹	107 metric tons
Total	196 metric tons

¹ See Appendix B for calculations and for GHG emission factor assumptions.



Solid Waste Emissions. It is anticipated that the potential new residences would generate approximately 55 tons of solid waste per year according to the CalEEMod output. As shown in Table 4.6-4, based on this estimate, this aspect of the project would generate approximately 25 metric tons of CDE per year.

**Table 4.6-4
 Estimated Annual Solid Waste Greenhouse Gas Emissions**

Emission Source	Annual Emissions (Carbon Dioxide Equivalent (CDE))
Solid Waste	25 metric tons

Sources: See Appendix B for calculations and for GHG emission factor assumptions.

Water Use Emissions. It is anticipated that the project would use approximately 5,000,000 gallons of water per year. Based on the amount of electricity generated in order to supply this amount of water, as shown in Table 4.6-5, this aspect of the project would generate approximately 21 metric tons of CDE per year.

**Table 4.6-5
 Estimated Greenhouse Gas Emissions from Water Use**

Emission Source	Annual Emissions (Carbon Dioxide Equivalent (CDE))
Water Use	20.66 metric tons

Sources: See Appendix B for calculations and for GHG emission factor assumptions.

Transportation Emissions. Mobile source GHG emissions were estimated using the ITE rate for average daily trips single family residences consistent with the project’s traffic study prepared by LLG (March 2011) and by the total vehicle miles traveled (VMT) estimated in CalEEMod. Based on the CalEEMod model estimate, potential development would generate approximately 1,491,574 annual VMT.

Table 5 shows the estimated mobile emissions of GHGs for the project based on the estimated annual VMT. As noted above, the CalEEMod model does not calculate N₂O emissions related to mobile sources. As such, N₂O emissions were calculated based on the project’s VMT using calculation methods provided by the California Climate Action Registry General Reporting Protocol (January 2009). As shown in Table 4.6-6 below, the project would result in approximately 763 metric tons of CDE units associated with mobile emissions.



**Table 4.6-6
 Estimated Annual Mobile Emissions of Greenhouse Gases**

Emission Source	Annual Emissions (Carbon Dioxide Equivalent (CDE))
Mobile Emissions (CO ₂ & CH ₄) ¹	732.58 metric tons
Mobile Emissions (N ₂ O) ²	30 metric tons
Total	763 metric tons

¹ See Appendix for calculations in CalEEMod Model output.

² See Appendix for calculations according to California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009, page 30-35.

Combined Construction, Stationary and Mobile Source Emissions. Table 4.6-7 combines the construction, operational and mobile GHG emissions associated with onsite development for the proposed project. Construction emissions associated with construction activity (approximately 753 metric tons CDE) are amortized over 30 years (the anticipated life of the project).

For the proposed project, the combined annual emissions would total approximately 808 metric tons per year in CDE units. This total represents roughly 0.00016% of California’s total 2004 emissions of 492 million metric tons. These emission projections indicate that the majority of the project’s GHG emissions are associated with vehicular travel (55%). However, as noted above, mobile emissions are in part a redirection of existing travel to other locations, and so are already a part of the total California GHG emissions.

**Table 4.6-7
 Combined Annual Emissions of Greenhouse Gases**

Emission Source	Annual Emissions
Construction	25 metric tons CDE
Operational	36 metric tons CDE
Area	196 metric tons CDE
Energy	25 metric tons CDE
Solid Waste	21 metric tons CDE
Water	
Mobile	763 metric tons CDE
Total	1,060 metric tons CDE

Sources: See Appendix B for calculations and for GHG emission factor assumptions.

As noted above, neither the SCAQMD or the City of Rancho Palos Verdes have adopted formal GHG emissions thresholds that apply to land use projects and no GHG emissions reduction



plan have been adopted in Rancho Palos Verdes. Therefore, the proposed project is evaluated based on the SCAQMD’s recommended/preferred option threshold for all land use types of 3,000 metric tons CO₂e per year (SCAQMD, “Proposed Tier 3 Quantitative Thresholds – Option 1”, September 2010).

Based on the development potential within Zone 2 that would result from revisions to the Landslide Moratorium Ordinance, total GHG emissions would be approximately 1,060 metric tons CDE per year. Although development facilitated by proposed project would generate additional GHG emissions beyond existing conditions, because the total amount of GHG emissions would be lower than the threshold of 3,000 metric tons per year, impacts from GHG emissions would be less than significant.

The proposed Amendments would also be generally consistent with applicable regulations or plans addressing greenhouse gas reductions. As indicated above, the CAT published the Climate Action Team Report to Governor Schwarzenegger and the Legislature (the “2006 CAT Report”) in March 2006. The CAT Report identifies a recommended list of strategies that the State could pursue to reduce climate change greenhouse gas emissions. The CAT strategies are recommended to reduce GHG emissions at a statewide level to meet the goals of the Executive Order S-3-05. These are strategies that could be implemented by various State agencies to ensure that the Governor’s targets are met and can be met with existing authority of the State agencies. In addition, in 2008 the California Attorney General published The California Environmental Quality Act Addressing Global Warming Impacts at the Local Agency Level (Office of the California Attorney General, Global Warming Measures Updated May 21, 2008). This document provides information that may be helpful to local agencies in carrying out their duties under CEQA as they relate to global warming. Included in this document are various measures that may reduce the global warming related impacts of a project. Tables 4.6-8 and 4.6-9 illustrate that the proposed project would be consistent with the GHG reduction strategies set forth by the 2006 CAT Report as well as the 2008 Attorney General’s Greenhouse Gas Reduction Measures.

**Table 4.6-8
 Project Consistency with Applicable Climate Action Team
 Greenhouse Gas Emission Reduction Strategies**

Strategy	Project Consistency
California Air Resources Board	
<p>Vehicle Climate Change Standards</p> <p>AB 1493 (Pavley) required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by the ARB in September 2004.</p>	<p>Consistent</p> <p>The vehicles that travel to and from the project site on public roadways would be in compliance with ARB vehicle standards that are in effect at the time of vehicle purchase.</p>
<p>Diesel Anti-Idling</p> <p>The ARB adopted a measure to limit diesel-fueled commercial motor vehicle idling in July 2004.</p>	<p>Consistent</p> <p>Current State law restricts diesel truck idling to five minutes or less. Although unlikely since this project would involve single family residences, diesel trucks operating from and making deliveries to the project site are subject to this state-wide law. Construction vehicles are also subject to this</p>



**Table 4.6-8
 Project Consistency with Applicable Climate Action Team
 Greenhouse Gas Emission Reduction Strategies**

Strategy	Project Consistency
	regulation.
<p>Hydrofluorocarbon Reduction</p> <p>1) Ban retail sale of HFC in small cans. 2) Require that only low GWP refrigerants be used in new vehicular systems. 3) Adopt specifications for new commercial refrigeration. 4) Add refrigerant leak-tightness to the pass criteria for vehicular inspection and maintenance programs. 5) Enforce federal ban on releasing HFCs.</p>	<p>Consistent</p> <p>This strategy applies to consumer products. All applicable products would be required to comply with the regulations that are in effect at the time of manufacture.</p>
<p>Alternative Fuels: Biodiesel Blends</p> <p>ARB would develop regulations to require the use of 1 to 4% biodiesel displacement of California diesel fuel.</p>	<p>Consistent</p> <p>The diesel vehicles such as construction vehicles that travel to and from the project site on public roadways could utilize this fuel once it is commercially available.</p>
<p>Alternative Fuels: Ethanol</p> <p>Increased use of E-85 fuel.</p>	<p>Consistent</p> <p>Residents at the project site could choose to purchase flex-fuel vehicles and utilize this fuel once it is commercially available regionally and locally.</p>
<p>Heavy-Duty Vehicle Emission Reduction Measures</p> <p>Increased efficiency in the design of heavy duty vehicles and an education program for the heavy duty vehicle sector.</p>	<p>Consistent</p> <p>The heavy-duty vehicles for construction activities that travel to and from the project site on public roadways would be subject to all applicable ARB efficiency standards that are in effect at the time of vehicle manufacture.</p>
<p>Achieve 50% Statewide Recycling Goal</p> <p>Achieving the State's 50% waste diversion mandate as established by the Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989), will reduce climate change emissions associated with energy intensive material extraction and production as well as methane emission from landfills. A diversion rate of 48% has been achieved on a statewide basis. Therefore, a 2% additional reduction is needed.</p>	<p>Consistent</p> <p>The City's Source Reduction and Recycling Element (SRRE) is the solid waste reduction planning document, and establishes goals and policies for the City regarding source reduction, recycling and composting and environmentally safe solid waste management alternatives to land disposal. The SRRE also helps the City in maintaining the 50% diversion rate requirement specified by AB 939. As of 2002 (the last verified date by the CIWMB), the City was recycling approximately 51% of its solid waste, thereby complying with the standards established by AB 939. It is anticipated that the proposed project would participate in the City's waste diversion programs and would similarly divert at least 51% of its solid waste.</p>
<p>Zero Waste – High Recycling</p> <p>Efforts to exceed the 50% goal would allow for additional reductions in climate change emissions.</p>	<p>Consistent</p> <p>As of 2002 (the last verified date by the CIWMB), the City was recycling 51% of its solid waste, thereby complying with the standards established by AB 939. It is anticipated that the proposed project would participate in the City's waste diversion programs and would similarly divert at least 51% of its solid waste. The project would also be subject to all applicable State and City requirements for solid waste reduction as they change in the future.</p>



**Table 4.6-8
 Project Consistency with Applicable Climate Action Team
 Greenhouse Gas Emission Reduction Strategies**

Strategy	Project Consistency
Department of Forestry	
<p>Urban Forestry</p> <p>A new statewide goal of planting 5 million trees in urban areas by 2020 would be achieved through the expansion of local urban forestry programs.</p>	<p>Consistent</p> <p>Landscaping for new residences would likely result in additional planted trees throughout the project site and would primarily consist of native plant species. In addition, Mitigation Measure AES-1 requires replacement planting for trees removed for new development allowed under the proposed ordinance revisions.</p>
Department of Water Resources	
<p>Water Use Efficiency</p> <p>Approximately 19% of all electricity, 30% of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Increasing the efficiency of water transport and reducing water use would reduce greenhouse gas emissions.</p>	<p>Consistent</p> <p>New residences would be required to comply with Municipal Code Chapter 15.34 - Water Efficient Landscaping. In addition, individual residences would be equipped with low-flow plumbing fixtures, further reducing water use.</p>
Energy Commission (CEC)	
<p>Building Energy Efficiency Standards in Place and in Progress</p> <p>Public Resources Code 25402 authorizes the CEC to adopt and periodically update its building energy efficiency standards (that apply to newly constructed buildings and additions to and alterations to existing buildings).</p>	<p>Consistent</p> <p>The proposed project would need to comply with the standards of Title 24 that are in effect at the time of development.</p>
<p>Appliance Energy Efficiency Standards in Place and in Progress</p> <p>Public Resources Code 25402 authorizes the Energy Commission to adopt and periodically update its appliance energy efficiency standards (that apply to devices and equipment using energy that are sold or offered for sale in California).</p>	<p>Consistent</p> <p>Under State law, appliances that are purchased for the project - both pre- and post-development – would be consistent with energy efficiency standards that are in effect at the time of manufacture.</p>
<p>Fuel-Efficient Replacement Tires & Inflation Programs</p> <p>State legislation established a statewide program to encourage the production and use of more efficient tires.</p>	<p>Consistent</p> <p>Residents and visitors of the project site could purchase tires for their vehicles that comply with state programs for increased fuel efficiency.</p>
<p>Municipal Utility Energy Efficiency Programs/Demand Response</p> <p>Includes energy efficiency programs, renewable portfolio standard, combined heat and power, and transitioning away from carbon-intensive generation.</p>	<p><i>Not applicable</i>, but project development would not preclude the implementation of this strategy by municipal utility providers. It should also be noted that the individual owners of lots may participate in the City's Voluntary Green Building Construction Program. The program allows those who wish to construct "green buildings" to work with a recognized organization in order to receive "green building" certification. This approach allows green building "experts" to work with interested applicants to achieve their green building objectives.</p>
<p>Municipal Utility Renewable Portfolio Standard</p>	



**Table 4.6-8
 Project Consistency with Applicable Climate Action Team
 Greenhouse Gas Emission Reduction Strategies**

Strategy	Project Consistency
<p>California's Renewable Portfolio Standard (RPS), established in 2002, requires that all load serving entities achieve a goal of 20% of retail electricity sales from renewable energy sources by 2017, within certain cost constraints.</p>	<p><i>Not applicable</i>, but the project would not preclude the implementation of this strategy by Southern California Edison.</p>
<p>Municipal Utility Combined Heat and Power</p> <p>Cost effective reduction from fossil fuel consumption in the commercial and industrial sector through the application of on-site power production to meet both heat and electricity loads.</p>	<p><i>Not applicable</i> since this strategy addresses incentives that could be provided by utility providers such as Southern California Edison and The Gas Company.</p>
<p>Alternative Fuels: Non-Petroleum Fuels</p> <p>Increasing the use of non-petroleum fuels in California's transportation sector, as recommended as recommended in the CEC's 2003 and 2005 Integrated Energy Policy Reports.</p>	<p>Consistent</p> <p>Residents and visitors of the project site could purchase alternative fuel vehicles and utilize these fuels once they are commercially available regionally and locally.</p>
<p>Green Buildings Initiative</p> <p>Green Building Executive Order, S-20-04 (CA 2004), sets a goal of reducing energy use in public and private buildings by 20% by the year 2015, as compared with 2003 levels. The Executive Order and related action plan spell out specific actions state agencies are to take with state-owned and -leased buildings. The order and plan also discuss various strategies and incentives to encourage private building owners and operators to achieve the 20% target.</p>	<p>Consistent</p> <p>As discussed previously, the project would be required to be constructed in compliance with the standards of Title 24 that are in effect at the time of development. The 2008 Title 24 standards are approximately 15% more efficient than those of the 2005 standards. In addition, all potential residential buildings would be required to adhere to the CAL Green Building Code which would include reducing energy use beyond Title 24 standards.</p> <p>It should also be noted that individual owners of lots may participate in the City's Voluntary Green Building Construction Program. The program allows those who wish to construct "green buildings" to work with a recognized organization in order to receive "green building" certification. This approach allows green building "experts" to work with interested applicants to achieve their green building objectives.</p>
<p>Business, Transportation and Housing</p>	
<p>Smart Land Use and Intelligent Transportation Systems (ITS)</p> <p>Smart land use strategies encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors.</p> <p>ITS is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods and services.</p> <p>The Governor is finalizing a comprehensive 10-year strategic growth plan with the intent of developing ways to promote, through state investments, incentives and technical assistance, land use, and technology</p>	<p>Consistent</p> <p>The project site is located within an existing residential neighborhood/community increasing the density of the area along an existing transit corridor in Rancho Palos Verdes.</p>



**Table 4.6-8
 Project Consistency with Applicable Climate Action Team
 Greenhouse Gas Emission Reduction Strategies**

Strategy	Project Consistency
<p>strategies that provide for a prosperous economy, social equity and a quality environment.</p> <p>Smart land use, demand management, ITS, and value pricing are critical elements in this plan for improving mobility and transportation efficiency. Specific strategies include: promoting jobs/housing proximity and transit-oriented development; encouraging high density residential/commercial development along transit/rail corridor; valuing and congestion pricing; implementing intelligent transportation systems, traveler information/traffic control, incident management; accelerating the development of broadband infrastructure; and comprehensive, integrated, multimodal/intermodal transportation planning.</p>	
Public Utilities Commission (PUC)	
<p>Accelerated Renewable Portfolio Standard</p> <p>The Governor has set a goal of achieving 33% renewable in the State's resource mix by 2020. The joint PUC/Energy Commission September 2005 Energy Action Plan II (EAP II) adopts the 33% goal.</p>	<p><i>Not applicable</i>, but project development would not preclude the implementation of this strategy by energy providers.</p>
<p>California Solar Initiative</p> <p>The solar initiative includes installation of 1 million solar roofs or an equivalent 3,000 MW by 2017 on homes and businesses, increased use of solar thermal systems to offset the increasing demand for natural gas, use of advanced metering in solar applications, and creation of a funding source that can provide rebates over 10 years through a declining incentive schedule.</p>	<p>Consistent</p> <p>Although no solar roofs are proposed at this time, individual lot owners would be able to install solar roofs at their residence.</p>

**Table 4.6-9
 Project Consistency with Applicable Attorney General
 Greenhouse Gas Reduction Measures**

Strategy	Project Consistency
Transportation-Related Emissions	
<p>Diesel Anti-Idling</p> <p>Set specific limits on idling time for commercial vehicles, including delivery vehicles.</p>	<p>Consistent</p> <p>Currently, the California Air Resources Board's (CARB) Airborne Toxic Control Measure (ATCM) to Limit Diesel-Fueled Commercial Motor Vehicle Idling restricts diesel truck idling to five minutes or less. Diesel trucks operating from and making deliveries to the project site are subject to this state-wide law. Construction vehicles are also subject to this regulation.</p>
<p>Transportation Emissions Reduction</p> <p>Provide shuttle service to public transportation.</p>	<p>Consistent</p> <p>Shuttle service to public transportation would be unnecessary as the project site is located near several bus lines, and is located within walking distance (approximately</p>



**Table 4.6-9
 Project Consistency with Applicable Attorney General
 Greenhouse Gas Reduction Measures**

<i>Strategy</i>	<i>Project Consistency</i>
	0.5 mile - 1 mile) to the Gold and Orange Routes served by the Palos Verdes Transit Authority.
Solid Waste and Energy Emissions	
<p><i>Solid Waste Reduction Strategy</i></p> <p>Project construction shall require reuse and recycling of construction and demolition waste.</p>	<p>Consistent</p> <p>The City's Source Reduction and Recycling Element (SRRE) is the solid waste reduction planning document, and establishes goals and policies for the City regarding source reduction, recycling and composting and environmentally safe solid waste management alternatives to land disposal. Project construction would be required to adhere to the goals and policies contained in the SRRE.</p>
<p><i>Water Use Efficiency</i></p> <p>Require measures that reduce the amount of water sent to the sewer system – see examples in CAT standard above. (Reduction in water volume sent to the sewer system means less water has to be treated and pumped to the end user, thereby saving energy.</p>	<p>Consistent</p> <p>As described above, the project would be anticipated to incorporate landscaping that would be designed to require minimal irrigation and to reflect the native vegetation of the surrounding area, thereby reducing water use. In addition, individual residences would be equipped with ultra-low-flow plumbing fixtures, further reducing water use at the project site.</p>
Land Use Measures, Smart Growth Strategies and Carbon Offsets	
<p><i>Smart Land Use and Intelligent Transportation Systems</i></p> <p>Require pedestrian-only streets and plazas within the project site and destinations that may be reached conveniently by public transportation, walking or bicycling.</p>	<p>Consistent</p> <p>The project site is located within walking distance (approximately 0.5 miles to 1 mile) to public transportation such as the Gold and Orange Routes served by the Palos Verdes Transit Authority.</p>

Although the proposed revisions to the Landslide Moratorium Ordinance do not include specific development projects, development facilitated by the revisions within Zone 2 would result in an incremental increase in GHG emissions. However, as indicated above in Table 4.6-7, the increase of GHG emissions would be approximately 1,060 metric tons CDE per year which is below the recommended threshold of 3,000 metric tons CDE per year. In addition, as indicated in Tables 4.6-8 and 4.6-9, the proposed project would be consistent with CAT strategies and the 2008 Attorney General Greenhouse Gas Reduction Measures. Therefore, the proposed Amendments would be consistent with the objectives of AB 32, SB 97, and SB 375, and their contribution to cumulative GHG emissions and climate change would not be significant.

Mitigation Measures. As specified above, the proposed project would result in less than 3,000 metric tons CDE per year and would be consistent with the 2006 CAT Report as well as the 2008 Attorney General's Greenhouse Gas Reduction Measures; therefore, no mitigation is necessary.

Significance after Mitigation. Impacts would be less than significant without mitigation.



c. Cumulative Impacts. As indicated above in Impact GHG-1, GHG emissions associated with the proposed project would be less than significant. Analyses of greenhouse gases are cumulative in nature as they affect the accumulation of greenhouse gases in the atmosphere. Since there is no cumulative impact, and give the relatively small contribution to cumulative GHG emissions associated with the proposed project, there are no project level impacts as well.

