4.22 GLOBAL CLIMATE CHANGE

1. SUMMARY

The proposed project would result in the emission of greenhouse gases (GHGs). This section discusses the scientific and regulatory developments surrounding global climate change and provides a quantitative inventory for the emissions that would result from project approval. In the absence of adopted regulatory criteria, a significance criterion also was developed to assess the impact of the project's GHG emissions. Both project and cumulative impacts were assessed against the identified significance criterion.

This section also addresses the Intergovernmental Panel on Climate Change's (IPCC) conclusion that there is a general scientific consensus that global climate change is occurring, and that the frequency of heat extremes, heat waves, and heavy precipitation events likely will increase. Currently accepted models predict that continued GHG emissions at or above current rates will produce more extreme global climate changes during the 21st century than were observed during the 20th century. Relatedly, the section also addresses the IPCC's conclusion that human activities (i.e., anthropogenic sources) have increased atmospheric concentrations of GHGs.

Nonetheless, there are uncertainties. The uncertainties relate to predicting: the actual climate change experienced by various areas of the world; the rate at which air and water temperatures will rise; whether the consequences of global climate change will be sudden or gradual; whether the consequences will be catastrophic or manageable; and whether international, national, state, and local measures will effectively reduce GHG emissions.

The emissions inventory for the proposed project considers numerous categories of GHG emission sources that would result from project approval: (1) emissions due to land use/vegetation changes, (2) emissions from construction activities, (3) emissions associated with residential building use, (4) emissions associated with nonresidential building use, (5) mobile source emissions, (6) transit center-related emissions, (7) emissions associated with swimming pools, (8) municipal source emissions, and (9) area emissions. The emissions from land use/vegetation changes and construction activities are one-time emissions event, whereas emissions from the other sources would occur annually, throughout the life of the project. The inventory identified approximately 21,292 metric tons (tonnes) of carbon dioxide equivalent (CO_2e) one-time emissions, and 15,360 tonnes of CO_2e annual emissions. Of this annual amount, about 49 percent is attributable to vehicular emissions associated with residential and commercial activities, and about 48 percent is attributable to the energy use associated with residential and nonresidential buildings. If the one-time emissions are annualized, assuming a 40-year development life (which likely is low), then the annualized emissions total is 15,892 tonnes of CO_2e per year.

These emission levels were analyzed to determine whether project approval would impede compliance with the GHG emissions reduction mandate established by the California Global Warming Solutions Act of 2006 (Assembly Bill

[AB] 32), which requires that California's GHG emissions be reduced to 1990 levels by 2020. The proposed project's CO_2e emissions from all annual sources are 28.8 percent below the level that would be expected if the proposed project were constructed consistent with the assumptions in the California Air Resources Board's projections for 2020 if "no actions are taken" (CARB 2020 NAT scenario). (See Climate Change Proposed Scoping Plan: A Framework for Change (Scoping Plan), California Air Resources Board (adopted December 2008).) As noted in the Scoping Plan, a reduction of 28.5 percent below the CARB 2020 NAT scenario is required to meet the goals of AB 32. Therefore, the proposed project would not impede implementation of AB 32 as its reduction below the CARB 2020 NAT scenario is greater than that required, and project impacts are less than significant.[1]

This inventory was prepared assuming that all emissions from the proposed project would be "new," in the sense that absent project development these emissions would not occur. Given the global nature of GHG emissions, questions arise over whether new global GHG emissions are caused by economic and population growth, and not the local development projects that simply accommodate such growth.

In addition, the proposed project's GHG emissions were assessed from a cumulative impact perspective. As discussed above, AB 32 requires approximately a 28.5 percent reduction of GHG emissions below the CARB 2020 NAT scenario. The project design features would reduce the proposed project's contribution of GHG emissions; therefore, especially when compared to a project that does not adopt such reduction strategies and sustainable development principles, the proposed project would enable California to meet its goal of returning to 1990 GHG emissions levels by 2020. As a result, the proposed project's GHG emissions are not considered "cumulatively considerable" under CEQA.

Please note that the technical analysis relied upon in this section was prepared by ENVIRON International Corporation. ENVIRON's report is titled, "Climate Change Technical Report: Vista Canyon" (January 2010), and is found in ***Appendix 4.22*** *of this EIR.*

2. EXISTING CONDITIONS

The following discussion addresses (i) the existing state of global climate change science, (ii) the regulation of GHG emissions at the national, state and local level, and (iii) the current project site conditions.

1 Assuming implementation of the residential overlay option, the proposed project would result in an annualized emissions total of 17,038 tonnes of CO_2e per year. This would constitute a 29.4 percent improvement over the CARB 2020 NAT scenario; thus, impacts also would be less than significant under the residential overlay option.

a. Science of Global Climate Change

This section summarizes the scientific issues surrounding climate change and global warming. It also provides a discussion of the actions and phenomena that contribute to climate change and puts into context global, national, and state emissions of GHGs.

(1) Global Climate Change

Global warming and *global climate change* are both terms that describe changes in the earth's climate. *Global climate change* is a broad term used to describe any worldwide, long-term change in the earth's climate. This change could be, for example, an increase or decrease in temperatures, the start or end of an ice age, or a shift in precipitation patterns. The term *global warming* is more specific than *global climate change* and refers to a general increase in temperatures across the earth. Though global warming is characterized by rising temperatures, it can cause other climatic changes, such as a shift in the frequency and intensity of rainfall or hurricanes. Global warming does not necessarily imply that all locations will be warmer. Some specific, unique locations may be cooler even though the world, on average, is warmer. All of these changes fit under the umbrella of global climate change.

While global warming can be caused by natural processes, there is a general scientific consensus that most current global warming is the result of human activity on the planet. This man-made, or anthropogenic, warming is primarily caused by increased emissions of "GHGs" that keep the earth's surface warm. This is called "the greenhouse effect." The greenhouse effect and the role GHGs play in it are described below.

(2) The Greenhouse Effect

Greenhouses allow sunlight to enter and then capture some of the heat generated by the sunlight's impact on the earth's surface. The earth's atmosphere acts like a greenhouse by allowing sunlight in, but trapping some of the heat that reaches the earth's surface. When solar radiation from the sun reaches the earth, much of it penetrates the atmosphere to ultimately reach the earth's surface; this solar radiation is absorbed by the earth's surface and then re-emitted as heat in the form of infrared radiation. Whereas the GHGs in the atmosphere let solar radiation through, the infrared radiation is trapped by greenhouses gases, resulting in the warming of the earth's surface. This phenomenon is referred to as the "greenhouse effect."

The earth's greenhouse effect has existed far longer than humans have and has played a key role in the development of life. Concentrations of major GHGs, such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and water vapor have been naturally present for millennia at relatively stable levels in the atmosphere, adequate to keep temperatures on Earth hospitable. Without these GHGs, the earth's temperature would be too cold for life to exist.

As human industrial activity has increased, atmospheric concentrations of certain GHGs have grown dramatically. **Figure 4.22-1, Carbon Dioxide and Methane concentrations have increased dramatically since the industrial revolution**, shows the increase in concentrations of CO_2 and CH_4 over time. In the absence of major industrial human activity, natural processes have maintained atmospheric concentrations of GHGs, and, therefore, global temperatures at constant levels over the last several centuries. As the concentrations of GHGs increase due to human activity, more infrared radiation is trapped, and the earth is heated to higher temperatures. This is the process that is described as human-induced global warming.

In 2007, the IPCC began releasing components of its Fourth Assessment Report on climate change. In February 2007, the IPCC provided a comprehensive assessment of climate change science in its Working Group I Report. That report states that there is a scientific consensus that the global increases in GHGs since 1750 are mainly due to human activities such as fossil fuel use, land use change (e.g., deforestation), and agriculture. In addition, the report states that it is likely that these changes in greenhouse gas concentrations have contributed to global warming. Confidence levels of claims in this report have increased since 2001 due to the large number of simulations run and the broad range of available climate models.

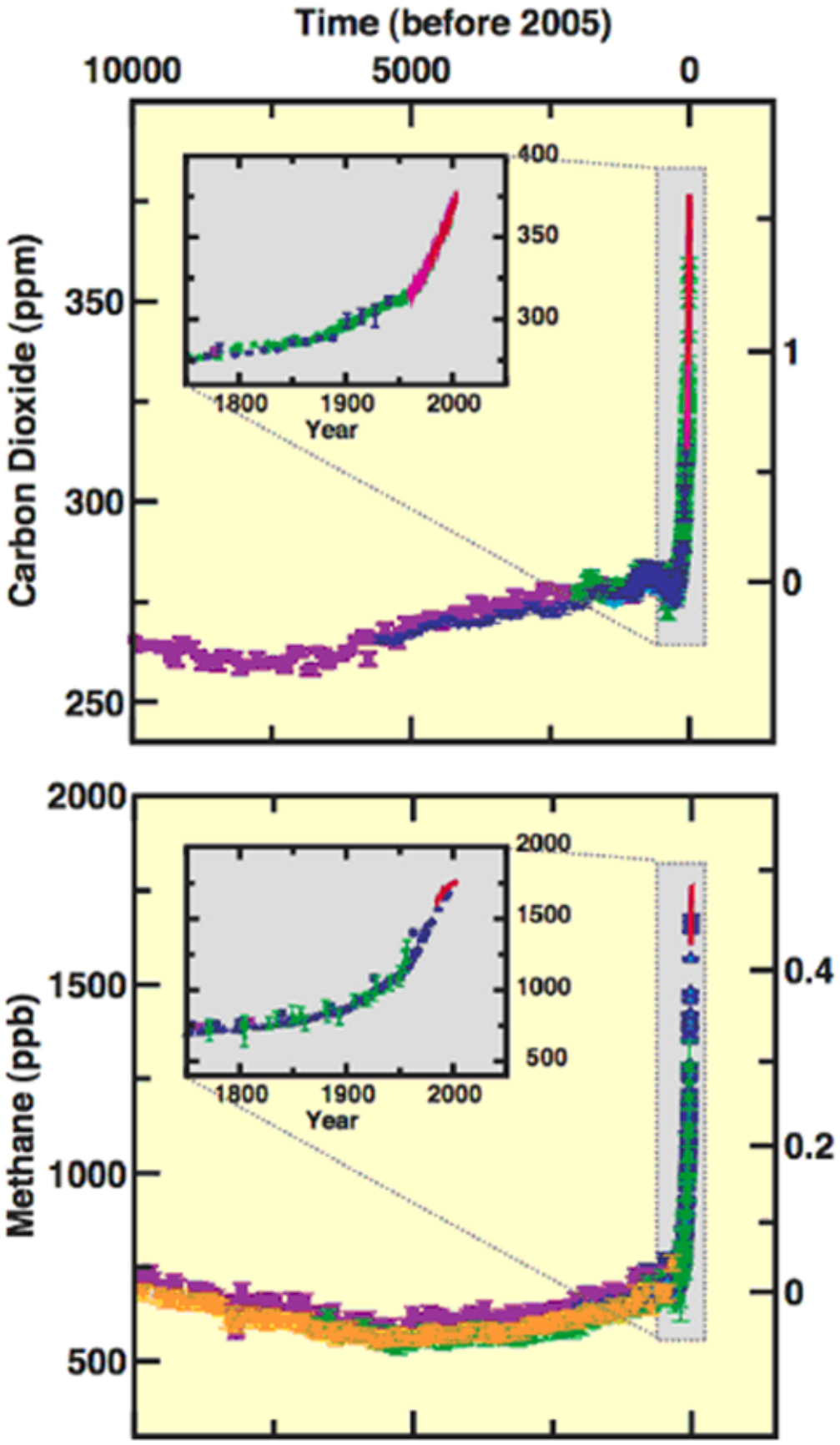
(3) GHG Emission Sources

The term "GHGs" includes gases that contribute to the natural greenhouse effect, such as CO_2, CH_4, and N_2O, as well as gases that are only man-made and that are emitted through the use of modern industrial products, such as hydrofluorocarbons (HFCs), chlorinated fluorocarbons (CFCs), and sulfurhexafluoride (SF_6). These last three families of gases, while not naturally present in the atmosphere, have properties that also cause them to trap infrared radiation when they are present in the atmosphere, thus making them GHGs. These six gases comprise the major GHGs that are recognized by the Kyoto Accords.[2,3] There are other GHGs that are not recognized by the Kyoto Accords, due either to the smaller role that they play in climate change or the uncertainties surrounding their effects. For example, atmospheric water vapor is not recognized by the Kyoto Accords because there is not an obvious correlation between water concentrations and specific human activities. Water appears to act in a positive feedback manner; higher temperatures lead to higher water concentrations, which in turn cause more global warming.

---

2 The federal and state mandatory GHG reporting rules, discussed later in this section also require the quantification of a seventh class of GHGs, the inorganic trifluorides, best represented by nitrogen trifluoride.

3 The Kyoto Accords sets legally binding targets and timetables for cutting the GHG emissions of industrialized countries; however, the US Congress did not approved this international treaty.



SOURCE: Newhall Ranch RMDP - February 2007,

FIGURE **4.22-1**

Carbon Dioxide and Methane concentrations have increased dramatically since the industrial revolution

The effect each of these gases has on global warming is a combination of the volume of their emissions and their global warming potential (GWP). GWP indicates, on a pound for pound basis, how much a gas will contribute to global warming relative to how much warming would be caused by the same mass of CO_2. CH_4 and N_2O are substantially more potent than CO_2, with GWPs of 21 and 310, respectively. However, these natural GHGs are nowhere near as potent as SF_6 and fluoromethane, which have GWPs of up to 23,900 and 6,500 respectively. GHG emissions are typically measured in terms of mass of CO_2e, which is calculated as the product of the mass of a given GHG and its specific GWP.

The most important GHG in human-induced global warming is CO_2. While many gases have much higher GWPs than the naturally occurring GHGs, CO_2 is emitted in such vastly higher quantities that it accounts for 85 percent of the GWP of all GHGs emitted by the United States. Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO_2 emissions and thus substantial increases in atmospheric CO_2 concentrations. In 2005, atmospheric CO_2 concentrations were about 379 parts per million (ppm), over 35 percent higher than the pre-industrial concentrations of about 280 ppm. In addition to the sheer increase in the volume of its emissions, CO_2 is a major factor in human-induced global warming because of its lifespan in the atmosphere of 50 to 200 years.

Concentrations of the second most prominent GHG, CH_4, have also increased due to human activities such as rice production, degradation of waste in landfills, cattle farming, and natural gas mining. In 2005, atmospheric levels of CH_4 were more than double pre-industrial levels, up to 1774 parts per billion (ppb) as compared to 715 ppb. CH_4 has a relatively short atmospheric lifespan of only 12 years, but has a higher GWP than CO_2.

Nitrous oxide concentrations have increased from about 270 ppb in pre-industrial times to about 319 ppb by 2005. Most of this increase can be attributed to agricultural practices (such as soil and manure management), as well as fossil-fuel combustion and the production of some acids. Nitrous oxide's 120-year atmospheric lifespan increases its role in global warming.

The emissions inventories presented in this section quantify the project's contribution of those GHGs, specifically carbon dioxide, methane and nitrous oxides, that are typically emitted by residential and commercial operations. The emissions inventories do not include HFCs, CFCs or SF_6, as those GHGs would not be emitted by project-related activities in appreciable amounts and the inventory methodologies available to quantify such gases for projects of this type are not yet well developed. The total project emissions are expressed as carbon dioxide equivalents, which accounts for each type of GHG emitted by the project and its respective global warming potential.

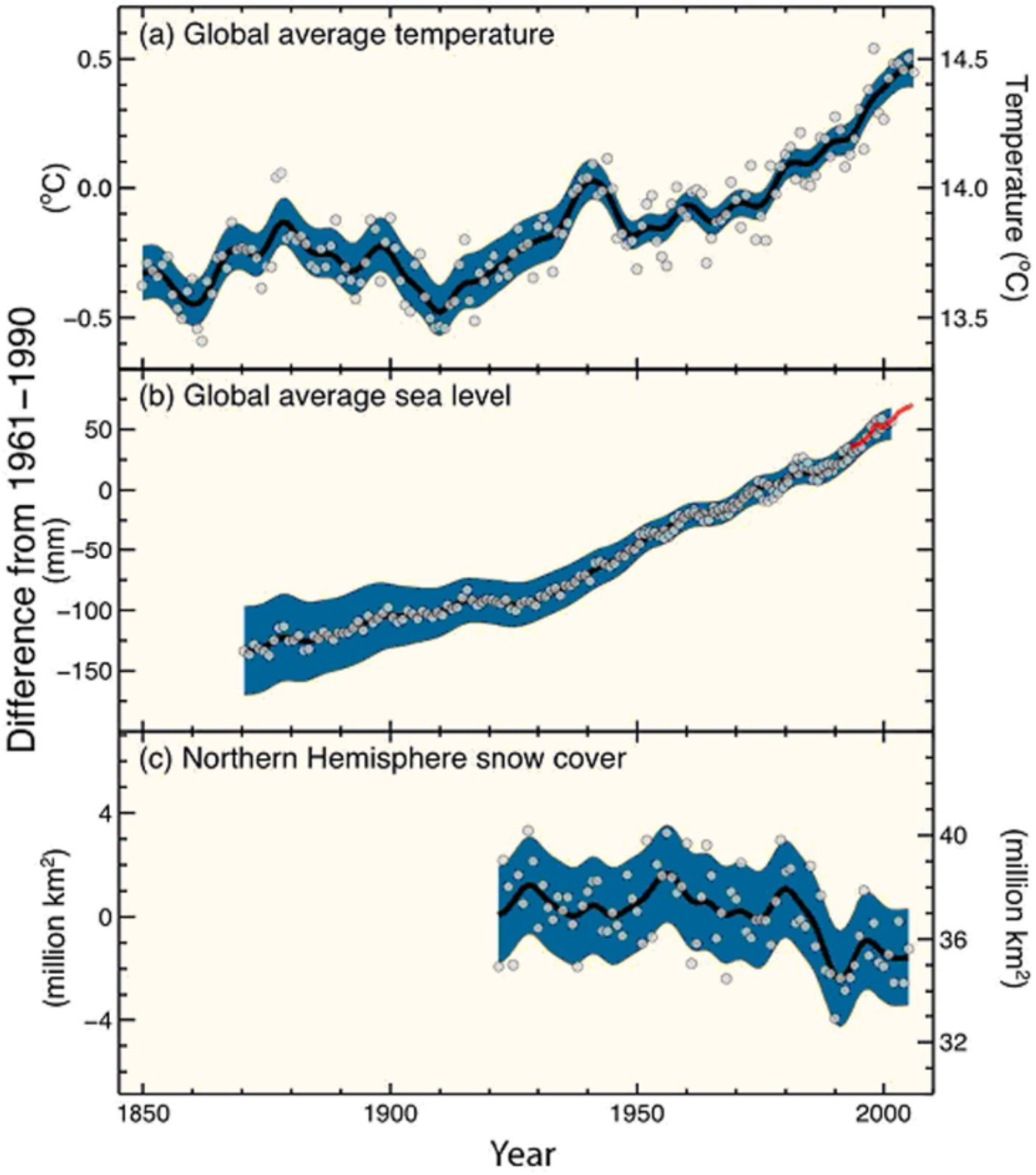
(4) Current and Projected Impacts of Global Warming

A strong indication that global warming is currently taking place is the fact that the top seven warmest years since the 1890s occurred after 1997. Furthermore, a warming of about 0.2°C per decade is projected by currently accepted models.

There is a general scientific consensus that global climate change will increase the frequency of heat extremes, heat waves, and heavy precipitation events. Other likely direct effects include an increase in the areas affected by drought and by floods, an increase in tropical cyclone activity, a rise in sea level, and recession of polar ice caps. The impacts of global warming have already been demonstrated by substantial ice loss in the Arctic. **Figure 4.22-2, Global warming trends and associated sea level rise and snow cover decrease,** shows the rise of global temperatures, the global rise of sea level, and the loss of snow cover from 1850 to the present.

Global temperature increases may have significant negative impacts on ecosystems, natural resources, and human health. Ecosystem structure and biodiversity will be compromised by temperature increases and associated climatic and hydrological disturbances. The availability and quality of potable water resources may be compromised by increased salinisation of ground water due to sea-level rises, decreased supply in semi-arid and arid locations, and poorer water quality arising from increased water temperatures and more frequent floods and droughts. These impacts on freshwater systems, in addition to the effects of increased drought and flood frequencies, can reduce crop productivity and food supply.

In addition to compromising food and water resources, there are other means through which climatic changes associated with global warming can affect human health and welfare. Warmer temperatures can cause more ground-level ozone, a pollutant that causes eye irritation and respiratory problems. Ranges of infectious diseases will likely increase, and some areas will face greater incidences of illness and mortality associated with increased flooding and drought events.



SOURCE: Newhall Ranch RMDP - February 2007,

FIGURE **4.22-2**

Global warming trends and associated sea level rise and snow cover decrease

Scenarios[4] for 2100 modeled in the IPCC's Fourth Assessment Report include:

Temperature Increase

Low Emissions Scenario: 1.8°C (best estimate), with a range of 1.1°C to 2.9°C

High Emissions Scenario: 4.0°C (best estimate), with a range of 2.4°C to 6.4°C

Sea Level Rise

Low Emissions Scenario: 0.18 to 0.38 meter (range)

High Emissions Scenario: 0.26 to 0.59 meter (range)

In its April 2007 Working Group II Report, the IPCC provided an assessment of the "current scientific understanding of impacts of climate change on natural, managed and human systems, the capacity of these systems to adapt and their vulnerability." The IPCC found that although some people will gain and some will lose because of global climate change, the overall change will be one of social and economic losses. Further, in May 2007, the IPCC produced its Working Group III Report on the "scientific, technological, environmental, economic and social aspects" of reducing GHG emissions to alleviate climate change. The report concluded that, even with current policies for sustainable development and mitigation of climate change, global GHG emissions will continue to grow over the next several decades.

California, in particular, is an area that could be negatively impacted by global warming. And, because climate change is already affecting California and current emissions will continue to drive climate change in the coming decades, regardless of any mitigation measured that may be adopted, the necessity of adaptation to the impacts of climate change is recognized by the State of California. Climate change risks are evaluated using two distinct approaches: (1) projecting the amount of climate change that may occur using computer-based global climate models and (2) assessing the natural or human system's ability to cope with and adapt to change by examining past experience with climate variability and extrapolating this to understand how the systems may respond to the additional impact of climate change.

---

[4] Future GHG emissions are the product of very complex and dynamic systems, determined by driving forces such as demographic development, socioeconomic development, and technological change. Their future evolution is highly uncertain. Scenarios are alternative images of how the future might unfold and are an appropriate tool with which to analyze how driving forces may influence future emission outcomes and to assess the associated uncertainties. The use of scenarios does assist in climate change analysis, including climate modeling and the assessment of impacts, adaptation, and mitigation. However, the possibility that any single emissions path (i.e., scenario) will occur as described in scenarios is highly uncertain.

Consistent with Governor Schwarzenegger's Executive Order (No. S-13-08), which called on state agencies to develop strategies for the identification and mitigation of expected climate impacts, the California Natural Resources Agency (CNRA) recently issued a document—the *2009 California Climate Adaptation Strategy* (*Adaptation Strategy*; December 2009)—that discusses the impacts of climate change upon California, as well as California's climate adaptation strategy.[5] The major anticipated climate changes expected in the State of California include increases in temperature and sea level, and decreases in precipitation, particularly snowfall. These gradual changes will also lead to an increasing number of extreme events, such as heat waves, wildfires, droughts, and floods. This would impact public health, ocean and coast resources, water supply, agriculture, biodiversity and the transportation and energy infrastructure. These issues are summarized further below.

(a) Rising Temperatures

The *Adaptation Strategy* highlighted new projections issued by MIT modelers that predict a median probability of surface warming of 5.2°C by 2100, which is much higher than previous modeling completed in 2003. Researchers modeled temperature changes specifically related to California. The model predicted greater temperature increases in summer than winter, and larger increases inland compared to the coast.

(b) Tipping Elements

The *Adaptation Strategy* emphasized "tipping elements," which bring about "abrupt changes that could push natural systems past thresholds beyond which they could not recover." According to CNRA, there are four main events that could bring about abrupt environmental changes:

1. A reduction in Arctic sea ice, which allows the (darker) polar oceans to absorb more sunlight, thereby increasing regional warming, accelerating sea ice melting even further, and enhancing Arctic warming over neighboring (currently frozen) land areas.

2. The release of methane (a potent GHG), which is currently trapped in frozen ground (permafrost) in the Arctic tundra, will increase with regional warming and melting of the ground, leading to further and more rapid warming and resulting in increased permafrost melting.

3. Continued warming in the Amazon could cause significant rainfall loss and large scale dying of forest vegetation, which will further release CO_2.

4. The accelerated melting of Greenland and West Antarctic Ice Sheets observed in recent times, together with regional warming over land and in the oceans, involves mechanisms that can reinforce the loss of ice and increase the rate of global sea-level rise.

[5] The *Adaptation Strategy* is available online at http://www.climatechange.ca.gov/adaptation/.

Each of these four events has a particular tipping temperature at which the event is likely to occur. The consequence of crossing each threshold could cause a 7-12 m rise in sea level over the course of several centuries, as shown in the **Table 4.22-1**, **Effects of Breaching Tipping Elements**, below.

Table 4.22-1
Effects if Breaching Tipping Elements

Additional Warming (ºF)	Environmental Change	Length of Time
1-3	Rapid Arctic sea ice melt	10 years
2-4	Irreversible melting of the Greenland Ice Sheet	300 years or more
5-9	Irreversible melting of the West Antarctic Ice Sheet	300 years or more
5-7	Amazon forest die-back	None given
6-11	Intensification of El Niño Southern Oscillation cycles	None given

(c) Extreme Natural Events

The *Adaptation Strategy* listed extreme natural events are likely to occur, including higher nighttime temperatures and longer, more frequent heat waves overall; a 12 to 35 percent decrease in precipitation levels by mid- to late 21st century; increased evaporation and faster incidences of snowmelt that will increase drought conditions, and more precipitation in the form of rain as compared to snow that will decrease water storage in California during the dry season and increase flood events during the wet season.

(i) Precipitation Changes and Rivers

The *Adaptation Strategy* noted that climate change will intensify California's "Mediterranean climate pattern," with the majority of annual precipitation occurring between November and March and drier conditions during the summer. This will increase droughts and floods and will affect river systems. One identified way to quantify potential impacts related to river systems is through calculating a rise in water temperature and its effects on fisheries resources.

(ii) Sea Level Rise

The *Adaptation Strategy* observed that sea level rise could cause damage to coastal communities and loss of land, which could reach tens of billions of dollars per year in direct costs and trillions of dollars of assets in collateral risk. Current calculations of sea level rise from 1900 to 2000 estimate approximately

7 inches along the California coast. Further, up to 55 inches of sea-level rise globally by the end of the 21st century is predicted under the "business as usual" model.

(iii) Low Sea Ice Levels

The *Adaptation Strategy* stated that substantial sea ice melting from Greenland and the West Antarctic Ice Sheet has the potential to further raise sea levels. The sea ice extent in the Western Nordic Seas (i.e., Greenland, Norway, and Iceland Seas) is at the lowest level observed in the last 800 years. The implication being that a substantial reduction in sea ice in the Arctic sea promotes alterations in atmospheric circulation and precipitation patterns that extend to the mid-latitudes (e.g., the California coast). Additionally, it was reported that the variations in sea ice extent are correlated with changes in sea surface temperatures and atmospheric and ocean heat transport from the North Atlantic.

The West Antarctic Ice Sheet is a marine-based ice sheet with edges that flow into floating ice shelves. Both the main sheet and the surrounding shelves have been showing signs of shrinking and collapsing due to global warming. Researchers have tracked the fate of at least nine shelves that have receded or collapsed around the Antarctic peninsula in the past 50 years.

(iv) Ocean Chemistry

The *Adaptation Strategy* also noted that an emerging effect from climate change may be acidification of the ocean. In turn, acidification will affect the ability of hard-shelled invertebrates to create their skeletal structures. The implications of this change being major losses to shellfish industries, and shifts in food resources for ocean fisheries. The primary contributing factors were cited as increasing level of CO_2 and weather pattern shifts. Increases in CO_2 result in increased uptake by the oceans, which result in decreased pH (acidification). Weather pattern shifts change the amount of calcium carbonate being delivered by rivers from sources stored in rocks, which further exacerbates the ability of invertebrates to form calcified shells.

One of the main contributing factors to CO_2, outside of human influences, is melting permafrost. When permafrost thaws, it releases carbon into soil or beneath lakes and releases CO_2 and methane into the atmosphere. Scientists are now estimating that there is more than twice the total amount of carbon stored in permafrost as there is in atmospheric carbon dioxide, and "could amount to roughly half those resulting from global land-use change during this century."

As noted above, the *Adaptation Strategy* identifies general and specific strategies intended to facilitate California's adaptation to a changing climate. Key preliminary recommendations included in the *Adaptation Strategy* follow:

1. Appointment of a Climate Adaptation Advisory Panel;
2. Improved water management in anticipation of reduced water supplies, including a 20 percent reduction in per capita water use by 2020;
3. Consideration of project alternatives that avoid significant new development in areas that cannot be adequately protected from climate change effects (e.g., flooding; sea level rise; wildlife hazards);
4. Preparation of state agency-specific adaptation plans, guidance or criteria by September 2010;
5. Consideration of climate change impacts for all significant state projects;
6. Assessment of climate change impacts on emergency preparedness;
7. Identification of key biological habitats and development of plans to minimize adverse effects from climate change;
8. Development of guidance by the California Department of Public Health by September 2010 for use by local health departments to assess adaptation strategies;
9. Amendment of local land use plans to assess climate change impacts and develop local risk reduction strategies;
10. Inclusion of climate change impact information into fire program planning by state fire fighting agencies;
11. Satisfaction of projected population growth and increased energy demand with greater energy conservation and increased renewable energy resources; and,
12. Development by the California Energy Commission (CEC) of a CalAdapt website, by September 2010, that synthesizes existing California climate change scenarios and climate impact research, with a focus on identifying potential funding sources.

(5) Global, National, and California GHG Emissions Inventories

Worldwide emissions of GHGs in 2004 were 26.8 billion tonnes of CO_2e. In 2007, the US emitted about 7 billion tonnes of CO_2e or about 24 tonnes of CO_2e per year per person. Over 80 percent of the GHG emissions in the US are comprised of CO_2 emissions from energy-related fossil fuel combustion. In 2004, California emitted 0.492 billion tonnes of CO_2e, or about 7 percent of the U.S. emissions.[6] If California

[6] 2004 is typically the most recent inventory year presented by CARB; as such, global and national emissions from 2004 are presented here to keep the comparison years the same.

were a country, it would be the 16th largest emitter of GHGs in the world. This large number is due primarily to the sheer size of California. Compared to other states, California has one of the lowest per capita GHG emission rates in the country, which is due to California's higher energy efficiency standards, temperate climate, and reliance on substantial out-of-state energy generation.

In 2004, 81 percent of GHG emissions (in CO_2e) from California were comprised of CO_2 emissions from fossil fuel combustion, with 4 percent comprised of CO_2 from process emissions. CH_4 and N_2O accounted for 5.7 percent and 6.8 percent of total CO_2e emissions respectively, and high GWP gases accounted for 2.9 percent of the CO_2e emissions. Transportation is by far the largest end-use category of GHG emissions. Transportation includes that used for industry (i.e., shipping) as well as residential use.

b. Regulation of Greenhouse Gas Emissions

Climate change has only recently been widely recognized as a threat to the global climate, economy and population. As a result, the climate change regulatory setting – federal, state and local – is complex and evolving. This section identifies key legislation, executive orders, and seminal court cases related to climate change.

(1) Federal Action

(a) Bush-Era National Policy Goal

In 2002, former President George W. Bush set a national policy goal of reducing the GHG emissions intensity (tons of GHG emissions per million dollars of gross domestic product) of the U.S. economy by 18 percent by 2012. No binding reductions were associated with the goal. Rather, the United States Environmental Protection Agency (U.S. EPA) administers a variety of voluntary programs and partnerships with GHG emitters in which the U.S. EPA partners with industries producing and utilizing synthetic GHGs to reduce emissions of these particularly potent GHGs.

(b) April 2007 U.S. Supreme Court Ruling

In *Massachusetts et al. vs. Environmental Protection Agency et al.* (April 2, 2007), the U.S. Supreme Court ruled that the Clean Air Act does not prohibit the U.S. EPA from regulating CO_2 emissions from new motor vehicles. The Supreme Court did not mandate that the U.S. EPA enact regulations to reduce GHG emissions, but found that the U.S. EPA could only not take action if it found that GHGs do not contribute to climate change or if it offered a "reasonable explanation" for not determining that GHGs contribute to climate change.

(c) Corporate Average Fuel Efficiency Standards

In response to the *Massachusetts* ruling (discussed above), the Bush Administration issued an executive order on May 14, 2007, directing the U.S. EPA and Departments of Transportation (DOT) and Energy (DOE) to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. Further, on December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law, which requires an increased Corporate Average Fuel Economy (CAFE) standard of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020.[7] EISA also requires the establishment of interim standards (from 2011 to 2020) that will be the "maximum feasible average fuel economy" for each fleet. On October 10, 2008, the National Highway Traffic Safety Administration (NHTSA) released a final environmental impact statement analyzing proposed interim standards for model years 2011 to 2015 passenger cars and light trucks. NHTSA issued a final rule for model year 2011 on March 23, 2009.

On May 19, 2009, President Obama announced a national policy for fuel efficiency and emissions standards in the U.S. auto industry. In response, on September 15, 2009, the U.S. Department of Transportation and U.S. EPA issued a proposed rule applicable to passenger cars, light-duty trucks, and medium duty passenger vehicles built in model years 2012 through 2016. As finalized in April 2010, the rule will improve average fuel economy standards to 35.5 miles per gallon by 2016. In addition, the rule will require model year 2016 vehicles to meet an estimated combined average emission level of 250 grams of carbon dioxide per mile. The implications of the rule include: (1) a 960 million metric tons reduction in carbon dioxide emissions over the lifetime of the vehicles regulated, which is equivalent to taking 50 million cars and light trucks off the road in 2030; (2) conservation of about 1.8 billion barrels of oil; and (3) enabling car buyers of 2016 models to enjoy a net savings of $3,000 over the lifetime of the vehicle.[8] Most recently, in late January 2010, President Obama pledged to reduce greenhouse gas emission from federal government operations by 28 percent over the next 10 years.

(d) Clean Air Act Endangerment and Cause or Contribute Findings

In response to the *Massachusetts* ruling (discussed above), on April 24, 2009, the U.S. EPA issued a proposed endangerment finding, stating that high atmospheric levels of greenhouse gases "are the

---

7 In addition to setting increased CAFE standards for motor vehicles, EISA addressed Renewable Fuel Standards (RFS) (Section 202); Appliance and Lighting Efficiency Standards (Section 301–325); and, Building Energy Efficiency (Sections 411–441). Additional provisions of EISA address energy savings in government and public institutions, promoting research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

8 For more information, please see http://www.epa.gov/otaq/climate/regulations.htm (last visited April 7, 2010).

unambiguous result of human emissions, and are very likely the cause of the observed increase in average temperatures and other climatic changes." The U.S. EPA further found that "atmospheric concentrations of greenhouse gases endanger public health and welfare within the meaning of Section 202 of the Clean Air Act." The U.S. EPA announced that the proposed finding was adopted on December 7, 2009; while the finding itself does not impose any requirements on industry or other entities, it does enable the U.S. EPA to adopt regulations designed to reduce greenhouse gas emissions. [9] In late December 2009, a legal action was filed challenging adoption of the endangerment finding.

(e) Reporting Requirements

Congress passed "The Consolidated Appropriations Act of 2008" (HR 2764) in December 2007, which included provisions requiring the establishment of mandatory GHG reporting requirements. The legislation specifically directed the U.S. EPA to publish draft rules by September 2008, and final rules by June 2009 that would mandate GHG reporting "for all sectors of the economy." The U.S. EPA published draft reporting rules on April 10, 2009, and final reporting rules on October 30, 2009. The rules, effective December 29, 2009, require suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions to submit annual reports to the U.S. EPA.

(2) Regional Action

(a) Western Climate Initiative (WCI)

WCI is a partnership among seven states, including California, and four Canadian provinces to implement a regional, economy-wide cap-and-trade system to reduce global warming pollution. WCI will cap the region's electricity, industrial, and transportation sectors with the goal of reducing the heat-trapping emissions that cause global warming 15 percent below 2005 levels by 2020. California is working closely with the other states and provinces to design a regional GHG reduction program that includes a cap-and-trade approach. The California Air Resources Board (CARB) plans to develop a cap-and-trade program that will link California and the other member states and provinces.

(3) State Action

California has enacted a variety of legislation that relates to climate change, some of which sets aggressive goals for GHG reductions within the state. In addition, as discussed below, the California National

---

9 The U.S. EPA's endangerment finding is available online at http://www.epa.gov/climatechange /endangerment.html.

Resources Agency (CNRA) and Office of Planning and Research (OPR) collaborated on the development of *State CEQA Guidelines* for the mitigation of GHG emissions and their effects. The CNRA adopted amendments to the *State CEQA Guidelines* that became effective on March 18, 2010.

(a) Executive Order S-3-05

Governor Schwarzenegger's Executive Order S-03-05 (June 1, 2005) mandates a reduction of statewide GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

(b) Assembly Bill 32

The California Global Warming Solutions Act of 2006, widely known as AB 32, requires CARB to develop and enforce regulations for the reporting, verification and reduction of statewide GHG emissions. The heart of the legislation is the requirement that statewide GHG emissions must be reduced to 1990 levels by 2020. California needs to reduce GHG emissions by approximately 28.5 percent below business-as-usual predictions of year 2020 GHG emissions to achieve this goal. The bill requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions. Key AB 32 milestones follow:

- **June 30, 2007**—Identification of discrete early action GHG emission reduction measures. On June 21, 2007, CARB satisfied this requirement by approving three early action measures. These were later supplemented by adding six other discrete early action measures.

- **January 1, 2008**—(i) Identification of the 1990 baseline GHG emissions level and approval of a statewide limit equivalent to that level, and (ii) Adoption of reporting and verification requirements concerning GHG emissions. In December 2007, CARB approved a statewide limit on GHG emissions levels for the year 2020 consistent with the determined 1990 baseline and adopted a mandatory reporting regulation.

- **January 1, 2009**—Adoption of a scoping plan for achieving GHG emission reductions. In December 2008, CARB adopted the "Climate Change Scoping Plan: A Framework for Change."

- **January 1, 2010**—Adoption and enforcement of regulations to implement the "discrete" actions.

- **January 1, 2011**—Adoption of GHG emissions limits and reduction measures identified in the scoping plan by regulation.

- **January 1, 2012**—GHG emissions limits and reduction measures adopted in 2011 become enforceable.

California's November 2010 ballot includes a proposition (Proposition 23) that proposes to temporarily suspend implementation of AB 32 until the State's unemployment rate returns to specified levels for four consecutive calendar quarters.

(c) Low Carbon Fuel Standard (LCFS)

Governor Schwarzenegger's Executive Order S-01-07 (January 18, 2007) requires a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California regulated by CARB. CARB identified the LCFS as a Discrete Early Action item under AB 32, and the final resolution (09-31) was issued on April 23, 2009.

(d) Assembly Bill 1493

Assembly Bill 1493 (AB 1493) was chaptered into law on July 22, 2002. AB 1493 required CARB to adopt regulations, by January 1, 2005, that would result in the achievement of the "maximum feasible" reduction in GHG emissions from vehicles used in the state primarily for noncommercial, personal transportation.[10] As enacted, the AB 1493 regulations were to become effective January 1, 2006, and apply to passenger vehicles and light-duty trucks manufactured for the 2009 model year or later.

Although the U.S. EPA traditionally regulates tailpipe emissions, CARB maintains some regulatory authority due to the severe air quality issues in California. In fact, pursuant to the federal CAA, CARB may implement stricter regulations on automobile tailpipe emissions than the U.S. EPA, provided a waiver from the U.S. EPA is obtained.

In September 2004, CARB adopted the AB 1493-mandated regulations and incorporated those standards into the Low-Emission Vehicle (LEV) program. The regulations set fleet-wide average GHG emission requirements for two vehicle categories: passenger car/light duty truck (type 1) and light-duty truck (type 2). The standards took into account the different global warming potentials of the GHGs emitted by motor vehicles, and were scheduled to phase in during the 2009 through 2016 model years. If implemented, these regulations would produce a nearly 30 percent decrease in GHG emissions from light-duty vehicles by 2030.

CARB subsequently applied to the U.S. EPA for a waiver under the Clean Air Act to authorize implementation of these regulations. The waiver request was formally denied by the U.S. EPA in December 2007 after California filed suit to prompt federal action. In January 2008, the California Attorney General filed a new lawsuit against the U.S. EPA for denying California's request for a waiver to regulate and limit GHG emissions from these automobiles. In January 2009, President Obama issued a directive to the U.S. EPA to reconsider California's request for a waiver. On June 30, 2009, the U.S. EPA granted the waiver for California for its GHG emission standards for motor vehicles.

---

[10] AB 1493 prohibited CARB from requiring: (1) any additional tax on vehicles, fuel, or driving distance; (2) a ban on the sale of certain vehicle categories; (3) a reduction in vehicle weight; or (4) a limitation on or reduction of speed limits and vehicle miles traveled.

(e) Renewables Portfolio Standard

Established in 2002 under SB 1078 and accelerated in 2006 under SB 107, California's Renewables Portfolio Standard (RPS) requires retail suppliers of electric services to increase procurement from eligible renewable energy resources by at least 1 percent of their retail sales annually, until they reach 20 percent by 2010.

Governor Schwarzenegger's Executive Order S-14-08 (November 11, 2008) mandated further improvements to the RPS, requiring retail suppliers of electric services to increase procurement from eligible renewable energy resources to 33 percent by 2020. In addition, on September 15, 2009, Governor Schwarzenegger signed Executive Order S-21-09, which requires CARB, under its AB 32 authority, to adopt a regulation consistent with the 33 percent renewable energy target established in Executive Order S-14-08 by July 31, 2010. CARB adopted a regulation that will implement the 33 percent standard in September 2010.

(f) Senate Bill 375

SB 375 provides for a new planning process to coordinate land use planning and regional transportation plans and funding priorities in order to help California meet the GHG reduction goals established in AB 32. (For example, the Scoping Plan adopted by CARB in December of 2008 relies on the requirements of SB 375 to implement the carbon emission reductions anticipated from land use decisions.) SB 375 requires regional transportation plans, developed by Metropolitan Planning Organizations (MPOs) relevant to the project area (including the Southern California Association of Governments [SCAG]), to incorporate a "sustainable communities strategy" in their regional transportation plans that will achieve GHG emission reduction targets for 2020 and 2035 set by CARB for passenger vehicles and light trucks.

In accordance with SB 375, on January 23, 2009, CARB appointed a Regional Targets Advisory Committee (RTAC) to provide recommendations and methodologies to be used in the target setting process. The RTAC provided its recommendations in a report to CARB on September 29, 2009.

On August 9, 2010, CARB staff issued the *Proposed Regional Greenhouse Gas Emission Reduction Targets For Automobiles And Light Trucks Pursuant To Senate Bill 375*. With respect to the SCAG region, CARB staff proposed a reduction target of 8 percent for 2020, and 13 percent for 2035. The emissions reduction will be measured relative to 2005 levels and as a percent reduction in per capita emissions associated with passenger vehicles and light trucks. Based on CARB staff's *Draft Regional Greenhouse Gas Emission Reduction Targets For Automobile And Light Trucks Pursuant To Senate Bill 375* (June 30, 2010), the targets exclude emission reductions expected from the AB 1493 and low carbon fuel standard regulations. The

proposed reduction targets were adopted by CARB's Board on September 23, 2010. (CARB's SB 375-related materials are available on CARB's website at http://www.arb.ca.gov/cc/sb375/sb375.htm.)

SB 375 also includes provisions for streamlined CEQA review for some infill projects, such as transit oriented development. As defined in SB 375, a "transit priority project" shall (1) contain at least 50 percent residential use, based on total building square footage and, if the project contains between 26 and 50 percent nonresidential uses, a floor area ratio of not less than 0.75; (2) provide a maximum net density of at least 20 dwelling units per acre; and (3) be within 0.5 mile of a major transit stop or high quality transit corridor. SB 375 will be implemented over the next several years.

(g) Energy Conservation Standards

Energy Conservation Standards for new residential and nonresidential buildings were first adopted by California Energy Resources Conservation and Development Commission in June 1977 and most recently revised in 2008 (Title 24, Part 6 of the California Code of Regulations). Title 24 governs energy consumed by the built environment for commercial and residential buildings in California. This includes the HVAC system, water heating, and some fixed lighting. (Non-building energy use, or "plug-in" energy use, is not covered by Title 24.) The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2008 Title 24 standards became effective on January 1, 2010, and are applicable to the proposed project.

California's 2009 Appliance Efficiency Regulations were adopted by the California Energy Commission on December 3, 2008, and approved by the California Office of Administrative Law on July 10, 2009. The regulations include standards for both federally regulated appliances and non-federally regulated appliances. While these regulations are now often seen as "business as usual," they do exceed the standards imposed by any other state and reduce GHG emissions by reducing energy demand.

In early January 2010, the California Building Standards Commission unanimously adopted the first-in-the-nation mandatory statewide green building code—referred to as CALGREEN. Taking effect on January 1, 2011, these comprehensive regulations will achieve major reductions in GHG emissions, energy consumption and water use to create a greener California. CALGREEN will require that every new building constructed in California reduce water consumption by 20 percent, divert 50 percent of construction waste from landfills and install low pollutant-emitting materials. It also requires separate water meters for nonresidential buildings' indoor and outdoor water use, with a requirement for moisture-sensing irrigation systems for larger landscape projects and mandatory inspections of energy systems (e.g., heat furnace, air conditioner and mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity and according to their design

efficiencies. CARB estimates that the mandatory provisions will reduce GHG emissions by 3 million metric tons equivalent in 2020.

(h) Senate Bill 97

With respect to CEQA, the California Legislature passed Senate Bill 97 (SB 97), which addresses GHG analysis under CEQA, during the 2007 legislative session. The bill contains two components, the first of which exempts from CEQA the requirement to assess GHG emissions for the following projects: (a) transportation projects funded under the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006; and (b) projects funded under the Disaster Preparedness and Flood Prevention Bond Act of 2006.

SB 97's second component confirmed that no *State CEQA Guidelines* then existed to advise agencies and project applicants of whether a particular project may result in a potentially significant impact to global climate change. Accordingly, SB 97 required that (i) OPR, by July 1, 2009, develop and transmit to CNRA guidelines for the mitigation of GHG emissions and their effects; and (ii) CNRA adopt amendments to the *State CEQA Guidelines* by January 1, 2010. (This second component of SB 97 is codified at Public Resources Code, Section 21083.05.)

Notably, Governor Schwarzenegger issued a signing message when enacting SB 97 that is instructive as to the Governor's policy on global climate change, which includes a directive towards coordinating the efforts of various agencies to efficiently and fairly achieve GHG emissions reductions:

> Current uncertainty as to what type of analysis of greenhouse gas emissions is required under [CEQA] has led to legal claims being asserted which would stop these important infrastructure projects. Litigation under CEQA is not the best approach to reduce greenhouse gas emissions and maintain a sound and vibrant economy. To achieve these goals, we need a coordinated policy, not a piecemeal approach dictated by litigation.

(1) Office of Planning and Research Advisory on CEQA and Climate Change

In June 2008, OPR published a Technical Advisory entitled *CEQA and Climate Change: Addressing Climate Change Through CEQA* (OPR Advisory). This guidance proposes a three-step analysis of GHG emissions:

1. *Mandatory Quantification of GHG Project Emissions.* The environmental impact analysis should include quantitative estimates of a project's GHG emissions from different types of emission sources. These estimates should include both construction-phase emissions, as well as completed operational emissions, using one of a variety of available modeling tools.

2. *Continued Uncertainty Regarding "Significance" of Project-Specific GHG Emissions.* Each environmental document should assess the significance of the project's impacts on climate change. The Technical Advisory recognizes uncertainty regarding what GHG impacts should be determined to be significant and encourages agencies to rely on the evolving guidance being developed in this area. Accordingly, OPR requested that CARB develop quantitative and qualitative significance criteria for the analysis of GHG emissions under CEQA. Per the Technical Advisory, the environmental analysis should describe a "baseline" of existing (pre-project) environmental conditions, and then add project GHG emissions on to this baseline to evaluate whether impacts are significant.

3. *Mitigation Measures.* According to the Technical Advisory, "all feasible" mitigation measures or project alternatives should be adopted if an impact is significant, defining feasibility in relation to scientific, technical, and economic factors. If mitigation measures cannot sufficiently reduce project impacts, the agency should adopt whatever measures are feasible and include a fact-based statement of overriding considerations explaining why additional mitigation is not feasible. OPR also identifies a menu of GHG emissions mitigation measures, ranging from balanced "mixed use" master-planned project designs to construction equipment and material selection criteria and practices.

In addition to this three-step process, the Technical Advisory contains more general policy-level guidance. Finally, the Technical Advisory encourages agencies to develop standard GHG emissions reduction and mitigation measures.

(2) CARB Preliminary Draft Proposal for Setting Interim Significance Thresholds

In response to OPR's request, in October 2008, CARB released a draft proposal identifying CEQA thresholds of significance for industrial, commercial and residential developments. The draft CARB thresholds proposed a tiered framework for developing thresholds of significance that rely upon the incorporation of a variety of performance measures to reduce GHG emissions associated with a project, as well as a numerical threshold of significance above which a project must include detailed GHG analysis in an EIR and incorporate all feasible mitigation measures. Although CARB proposed a 7,000 tons per year threshold for industrial projects, a numerical threshold for commercial and residential projects was not proposed, and was said to be under development. As of this time, CARB has suspended its work on CEQA thresholds.

(3) Adopted State CEQA Guidelines Amendments

On December 30, 2009, following an extensive public outreach program, CNRA adopted amendments to the *State CEQA Guidelines* that address GHG emissions and related issues. CNRA transmitted the adopted amendments and the entire rulemaking file to the Office of Administrative Law (OAL) on December 31, 2009, and the amendments became effective on March 18, 2010.

In its *Final Statement of Reasons for Regulatory Action* (December 2009), CNRA observed:

> Analysis of GHG emissions in a CEQA document presents unique challenges to lead agencies. Such analysis must be consistent with existing CEQA principles, however. Therefore, the Amendments comprise relatively modest changes to various portions of the existing CEQA Guidelines. Modifications address those issues where analysis of GHG emissions may differ in some respects from more traditional CEQA analysis. Other modifications clarify existing law that may apply both to analysis of GHG emissions as well as more traditional CEQA analyses.

(CNRA, *Final Statement of Reasons for Regulatory Action* (December 2009), p. 13.) The above excerpted language is consistent with the overall spirit of the adopted *State CEQA Guidelines* language, which does not bring about radical changes in CEQA analysis but seeks to affirm that traditional CEQA principles extend to GHG emissions and global climate change.

With respect to the significance assessment, newly added *State CEQA Guidelines* Section 15064.4, subdivision (b), provides:

> 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.

In addition, CNRA amended Appendix G, Environmental Checklist Form, of the *State CEQA Guidelines* to ask the following with respect to greenhouse gas emissions:

> Would the project:
>
> a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
>
> b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The amendments also provide that lead agencies should consider all feasible means of mitigating greenhouse gas emissions that substantially reduce energy consumption or GHG emissions. These potential mitigation measures may include carbon sequestration. If off-site or carbon offset mitigation measure are proposed they must be part of reasonable plan of mitigation that the agency itself is committed to implementing.

(4) Local Action

(a) Los Angeles County

In January 2007, the Los Angeles County Board of Supervisors adopted the Countywide Energy and Environmental Policy, which provides guidelines for sustainability and green building design within County departments. In part, the policy incorporates a sustainable building program into County capital improvement projects and seeks to integrate energy efficient and sustainable designs into future County building plans. For example, as of January 16, 2007, the County's Capital Construction Program must achieve Leadership in Energy and Environmental Design (LEED) Silver Certification for new County (government) buildings greater than 10,000 square feet (sq ft).

Three ordinances also were adopted by the County of Los Angeles Board of Supervisors in late 2008, and became effective on January 1, 2009. These ordinances include: (1) green building standards ordinance; (2) low-impact development standards ordinance; and, (3) drought-tolerant landscaping ordinance. With respect to green building, the County requires buildings to consume 15 percent less energy than authorized per the 2005 Title 24 standards. In addition, for building permit applications filed on or after January 1, 2010, the ordinance requires that LEED or LEED-equivalent ratings be met. In sum, the various requirements imposed by the green building ordinance conserve water, conserve energy, conserve natural resources, divert waste from landfills, minimize impacts to existing infrastructure, and promote a healthier environment. An excerpt from the green building ordinance is provided below; for more information, please see Title 21 and 22 of the LA County Code.

While County policies would not be applicable to the proposed project, which would be annexed into the City of Santa Clarita, information is provided regarding County policies to demonstrate the relative efficiencies of the project design. As will be evidenced below, various design features of the proposed project exceed the requirements of the County's green building program, and are indicators of sustainable development.

(b) South Coast Air Quality Management District (SCAQMD)

On December 5, 2008, the SCAQMD Governing Board adopted an interim CEQA GHG significance threshold for projects where the SCAQMD is the lead agency, including industrial (stationary source) projects. To achieve a policy objective of capturing 90 percent of GHG emissions from new residential/commercial development projects and implement a "fair share" approach to reducing emission increases from each sector, SCAQMD staff also is proposing to combine performance standards and screening thresholds in order to develop a defensible significance threshold for such projects. However, the proposed significance thresholds for residential and commercial projects are still in draft form as of this writing.

As of SCAQMD staff's November 2009 meeting, the draft tiered threshold provides the following guidance:

- **Tier 1:** Is the project exempt from CEQA? If yes, the project is not significant and no further analysis is required.
- **Tier 2:** Is the project consistent with an approved regional climate action plan? If yes, the project is not significant and no further analysis is required.
- **Tier 3:** Would the project result in emissions below the screening level criteria? If yes, the project is not significant and no further analysis is required.

  Non-Land Use Type Specific Screening Level Criteria

  3,000 metric tons per year

  Land Use Type Specific Screening Level Criteria

  Residential: 3,500 metric tons per year

  Commercial: 1,400 metric tons per year

  Mixed-Use: 3,000 metric tons per year

- **Tier 4:** Would the project comply with certain performance-based standards? If yes, the project is not significant and no further analysis is required.

  The performance-based standard asks whether a project would achieve *either* a 28 percent reduction below business-as-usual levels or a 4.6 metric ton per service population per year efficiency metric, *and* emit no more than 25,000 metric tons per year.

- **Tier 5:** Would the project secure sufficient carbon offsets or credits to reduce emissions to a level at or below the screening level criteria presented in Tier 3, assuming a 30-year project life. If yes, the project is not significant and no further analysis is required.

c. Project Site Conditions

The approximately 185-acre project site is comprised primarily of undeveloped, disturbed land, except for an equipment storage yard and a single-family residence located on the western side of the project site, and the Mitchell family cemetery located on the small elevated terrace on the northeastern portion of the project site. Remains of the Mitchell family homestead also are located on the southeastern portion of the project site, within the proposed Oak Park. These remains consist primarily of building foundations and fencing associated with past ranching and agricultural operations.

Environmental conditions on the project site have been altered substantially by historical uses of the property, including outdoor storage, agricultural cultivation, grading, and residential uses. Unauthorized dumping also has occurred on the project site. There is little remaining natural vegetation remaining with the exception of a vegetated area on the southeastern portion of the project site that includes some standing oaks and introduced grasses.

The analysis conservatively assumes that the project site is undeveloped and, therefore, has no associated GHG emissions. This assumption may serve to slightly overstate GHG emissions relative to the existing condition as the project site currently may have some GHG emissions associated with the single-family residence.

3. PROJECT IMPACTS

The inhabitants of residential units and nonresidential building occupants use electricity, heating, and motor vehicle transportation, all of which emit GHGs. Accordingly, this section inventories and assesses the significance of GHG emissions from the proposed project during construction and at build-out when measured against existing, on-site conditions. This inventory includes some emissions that are within the control of the project applicant, such as grading and the placement of utilities; some emissions that are within the control of the individuals building the residential and commercial buildings, such as

construction emissions; and some emissions in which control over emissions is shared by the developers and the residents, such as energy use in the built environment and traffic emissions.

a. Significance Threshold Criteria

At this time, there is no absolute consensus in the State of California among CEQA lead agencies regarding the analysis of global climate change and the selection of significance criteria. In fact, numerous organizations, both public and private, have released advisories and guidance with recommendations designed to assist decisionmakers in the evaluation of GHG emissions given the current uncertainty regarding when emissions reach the point of significance. That being said, several options are available to lead agencies.

First, lead agencies may elect to rely on thresholds of significance recommended or adopted by state or regional agencies with expertise in the field of global climate change. (See *State CEQA Guidelines*, Section 15064.7(c).) However, to date, neither CARB nor SCAQMD have adopted significance thresholds for GHG emissions for residential or commercial development under CEQA.[11] As discussed above, CARB has suspended all efforts to develop a threshold, and SCAQMD's threshold remains in draft form. Accordingly, this option (i.e., reliance on an adopted threshold) is not viable for the City of Santa Clarita. That being said, CNRA's recent amendments to Appendix G of the *State CEQA Guidelines* are instructive. As provided in Appendix G, lead agencies may want to consider whether the project would:

(a) generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

(b) conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.[12]

---

11 Of note, in December 2009, the San Joaquin Valley Unified Air Pollution Control District adopted guidance for use by local lead agencies in assessing the significance of a project's GHG emissions under CEQA. The guidance relies on the use of performance-based standards, and requires that projects demonstrate a 29 percent reduction in GHG emissions, from business-as-usual, to determine that a project would have a less-than-significant cumulative impact. This threshold is not so dissimilar from the criteria utilized by the City of Santa Clarita, as defined further below, which effectuates a 28.5 percent emission reduction in order to support a finding that a project's emissions are not significant.

12 Appendix G, Environmental Checklist Form, of the State CEQA Guidelines does not contain mandatory significance thresholds. As noted in the introductory text to Appendix G, "[t]he sample questions in this form are intended to encourage thoughtful assessment of impacts, and do not necessarily represent thresholds of significance." For purposes of this greenhouse gas analysis, the Appendix G criteria are considered *as* supplemented by the City's determination that whether a project is consistent with the reduction mandate established by AB 32 is relevant when determining the significance of project impacts.

Second, lead agencies may elect to conclude that the significance of greenhouse gas emissions under CEQA is too speculative. However, the City has determined that this option is not viable due to the import and focus on global climate change created by the various regulatory schemes and scientific determinations cited in this section.

Third, lead agencies may elect to use a zero-based threshold, such that any emission of greenhouse gases is significant and unavoidable. The City does not endorse this type of threshold because it may indirectly truncate the analysis provided in CEQA documents and the mitigation commitments secured from new development. Moreover, no state or regional agency with expertise in global climate change has endorsed a zero-based threshold, which would likely result in the preparation of extensive environmental documentation for even the smallest of projects, thereby inundating lead agencies and creating an administrative burden.

Fourth, lead agencies may elect to utilize their own significance criteria, so long as such criteria are informed and supported by substantial evidence. Here, the City has elected to identify its own significance criterion until such time as a state or regional threshold is adopted by a competent authority (e.g., CARB or SCAQMD). Recent amendments to the *State CEQA Guidelines* adopted by CNRA, and specifically the addition of *State CEQA Guidelines* Section 15064.4, subdivision (b), informed the City's selection of a significance criterion:

> 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.

Appendix G of the *State CEQA Guidelines* also has been revised to provide some guidance regarding the criteria that may be used to assess whether a project's impacts on global climate change are significant. As noted above, the Appendix G environmental checklist form asks whether a project would (a) generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or (b) conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Based on the above factors (and particularly the adopted addition of *State CEQA Guidelines* Section 15064.4, subdivisions (b)(2) and (b)(3)), the City of Santa Clarita (the lead agency for the proposed project) has determined it is appropriate to rely on AB 32 as a benchmark for purposes of this EIR and use the statute to inform their judgment as to whether the proposed project's GHG emissions would result in a significant impact. (See *State CEQA Guidelines*, Section 15064, subd. (f)(1).) Accordingly, the following significance criterion is used to assess whether the project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment:

> *Will the project's GHG emissions impede compliance with the GHG emissions reductions mandated in AB 32?*

To evaluate the proposed project's GHG emissions in relation to AB 32, the inventory is compared with the CARB 2020 No Action Taken (CARB 2020 NAT) scenario to determine if the project is likely to be consistent with rules propagated for California to meet its 2020 emissions reduction mandate.

Please note that while there seems to be a general consensus amongst California lawmakers, scientists and others that global climate change is a cumulative problem, such that one single project rarely has a significant effect, this analysis evaluates the proposed project at the project-level *and* cumulative-level.

b. Impact of Project on Global Climate Change

To preface, in the developed world, GHG increases are directly tied to population growth. Therefore, it makes sense to consider operational emissions (including vehicular emissions) from new residences as growth, as residences are rarely removed from the housing supply once constructed. (There are exceptions, such as when one housing development replaces another; in those cases, the replacement residential development need not be considered growth.)

However, it is not clear that nonresidential development (e.g., office space, retail space, and industrial buildings) should be considered new growth for vehicular travel and GHG emission purposes. To the extent that nonresidential development serves existing residential development, its vehicular travel may not be new. Also, if the new nonresidential area serves an area with a high residential-to-non-residential

ratio, then this new nonresidential growth may reduce shopping and work trip lengths and reduce GHG emissions associated with mobile sources. If, however, the new nonresidential area results in longer trips for its workers and shoppers than they would have previously made, then it adds GHG emissions.

In this report, it is assumed that the new nonresidential area proposed for the project site serves an area with a high residential-to-nonresidential ratio. Therefore, new nonresidential growth associated with the proposed project likely would reduce shopping and work trip lengths and VMT from existing residences, and may reduce GHG emissions associated with mobile sources. Further, to the extent that the new nonresidential development serves new residential development, much of the nonresidential vehicle travel would already be counted in the evaluation of the new residential vehicle travel. While the nonresidential vehicle trips would be already counted elsewhere, the other operational emissions from the nonresidential areas would be considered new.

(1) Existing Emissions

The project site is currently occupied by one, approximately 2,000-square foot, single-family residence, which as an associated private storage yard that is roughly 1.5 acres in size. Based on the existing, on-site uses, the building energy use-related and mobile source-related emissions were estimated for the single-family residence. As detailed in **Appendix 4.22**, existing, on-site emissions are estimated to be 18 metric tonnes of CO_2e per year.

(2) Source-Specific Inventory Methodologies

As previously mentioned, the project site is located within the jurisdiction of SCAQMD. However, as SCAQMD guidelines for the preparation of GHG inventories have not yet been developed, this inventory has been developed consistent with the methodologies established by the California Climate Action Registry (CCAR) where possible. When guidance from the CCAR is lacking, methodologies established by the IPCC and best available science are used. Legislation and rules regarding climate change, as well as scientific understanding of the extent to which different activities emit GHGs, continue to evolve; as such, the inventory in this report is a reflection of the guidance and knowledge currently available.

Additionally, while the number of proposed residential units and square footage of commercial development for the proposed project is known, the exact design of the residential units, commercial buildings and other project uses are not finalized at the entitlement stage. Even so, the types of buildings and the types of facilities at the project site can be used for developing an estimate of the project's anticipated GHG emissions. And, while energy used in a building depends in part on the built environment, actual future emissions from the site will depend heavily upon the future homeowners' and business owners' habits. Because the actual future occupants and their habits are not yet known, average

current behavior is assumed. That assumption is likely to be a "worst-case" assumption. Given the current regulatory environment and the media focus on global climate change, it is likely that the actual future occupants will be more sensitive to the GHG emissions caused by their activities and, therefore, their activities will result in lower GHG emissions than average current behavior shows.

For additional information regarding the methodologies used and assumptions made when estimating the emissions associated with the proposed project, please see Section 4, Greenhouse Gas Inventory, of ENVIRON's technical report, which can be found in **Appendix 4.22** of this EIR.

(a) One-Time Emission Sources

The one-time emission sources associated with the proposed project include emissions resulting from (i) land use/vegetation changes and (ii) construction activities.

(1) Land Use/Vegetation Change

This discussion addresses the calculation of the positive and negative GHG emissions associated with vegetation removal and re-vegetation of the project site. The permanent removal of existing vegetation can contribute to net GHG increases by reducing existing carbon sequestration capacity. However, areas that are temporarily disturbed but re-vegetated with the same vegetation type are assumed to have no net impact. Following completion of the proposed project, some areas would be re-vegetated with trees, shrubs and other vegetation. These areas could potentially sequester more CO_2 from the atmosphere than was sequestered pre-development. The difference between the total pre and post-development sequestered CO_2 is the one-time CO_2 released from clearing the vegetation less the CO_2 sequestered by new plantings.

The one-time release of GHG emissions due to permanent changes in carbon sequestration capacity was calculated using the following four steps:

1. Identify and quantify the change in area of various land types due to the development (e.g., alluvial scrub, non-native grassland, agricultural, etc.). Areas temporarily disturbed that would eventually recover to become vegetated are not counted as vegetation removed as there is no net change in vegetation or land use.

2. Estimate the biomass associated with each land type.

3. Calculate CO_2 emissions from the net change of vegetation.

4. Calculate the overall change in sequestered CO_2.

Planting trees in conjunction with project development would result in carbon sequestration. Urban trees are only net carbon sinks when they are actively growing, which is assumed to be a default 20-year period. Thereafter, the accumulation of carbon in biomass slows with age, and becomes completely offset by losses from clipping, pruning, and occasional death. While the exact number and type of trees that would be planted on the project site has not been determined, it is estimated that approximately 2,100 new net trees would be planted.

In order to estimate the number of GHG emissions associated with land use/vegetation changes on the project site, the GHG emission savings that would result from re-vegetation of the project site are subtracted from the GHG emissions that would result from site clearing.

(2) Construction Activities

This discussion addresses the estimation of GHG emissions from construction activities associated with project build-out. There are three major construction phases for an urban development: demolition, site grading, and building construction. The building construction phase can be broken down further into three subphases: building construction, architectural painting, and asphalt paving. GHG emissions from these construction phases are largely attributable to fuel use from construction equipment and worker commuting.

As a preliminary note, the environmental consultant was provided with the phase length and the number of each type of construction equipment used during construction of buildings. However, the number of worker and vendor trips represent URBEMIS default values and settings. In addition, emissions were estimated assuming "worst day" conditions (i.e., maximum equipment usage, maximum worker and vendor commutes) for the entire phase duration. As a result, the emissions presented here are very conservative.

(3) Estimating GHG Emissions from Construction Equipment

In order to calculate the GHG emissions from off-road equipment used during demolition, grading, building construction, and paving, SCAQMD's URBEMIS software was utilized. The environmental consultant first estimated the number and types of equipment that would be used during the construction phase. The analysis assumed that each piece of equipment would operate for eight hours a day, five days a week during a given phase duration. CARB's OFFROAD2007 model was then utilized to identify appropriate specifications for each type of construction equipment (horsepower, load factor, and GHG emission factor). In summary, CO_2 emissions for each type of construction equipment were calculated as follows: Equipment Emissions [grams] = Total equipment-hours * emission factor [grams per brake horsepower-hour] * equipment horsepower * load factor.

(4) GHG Emissions from Worker Commuting

Emissions from worker commuting are associated with workers involved in the site grading phases, as well as all building construction subphases. GHG emissions are emitted from worker vehicles in two ways: running emissions, produced by driving the vehicle, and startup emissions, produced by turning the vehicle on. The majority of worker commuting emissions are running emissions.

Running emissions were calculated using the same general method for the grading, building and paving phases. For the architectural coating phase, both running and startup emissions were assumed to equal 20 percent of construction phase emissions, which is the URBEMIS default value. Total running emissions from worker commuting during each phase were calculated by estimating the total vehicle miles traveled (VMT) by construction workers, and then multiplying this value by the representative GHG emission factors for the vehicles they are expected to drive.

Startup emissions were calculated using the following assumptions: the number of round trips equals the number of worker days; the mix in vehicles would be 50 percent light duty autos and 50 percent light duty trucks; and, two engine startups per day, with a 12-hour wait before each startup, would be required.

The U.S. EPA recommends assuming that CH_4, N_2O, and HFCs account for five percent of GHG emissions from on-road light-duty vehicles, taking into account their GWPs. To incorporate these additional GHGs into the calculations, the total GHG footprint was calculated by dividing the CO_2 emissions by 0.95.

(5) GHG Emissions from Vendor Trips

Similar to worker commuting trips, GHGs emitted from vendor vehicles trips are based on running and startup emissions. The number of daily vendor trips was based on the size and type of buildings specified and URBEMIS defaults, which are based on four general land use categories: multi-family, single-family, commercial/retail/school/recreation, and office/industrial.

In order to quantify the running emissions, the total number of daily round trips was multiplied by the number of work days, one-way trip length and a factor of two to account for roundtrip to give the VMT. The GHG emissions associated with vendor trips equals VMT multiplied by an appropriate emissions factor.

Startup emissions were calculated using the following assumptions: all vehicles were heavy heavy-duty trucks; and, two engine startups per day, with a 12 hour wait before each startup, would be required.

(6) Dirt Hauling

The proposed project includes the hauling of up to 500,000 yards of fill dirt to the project site from two locations within the nearby Center Pointe Business Park. URBEMIS assumes that each soil hauling truck carries up to 20 cubic yards of material and travels 15 miles roundtrip. Based on URBEMIS defaults, it is estimated that there will be 50,000 soil hauling trips for the proposed project. The number of roundtrips is multiplied by the roundtrip length to determine total VMT. After total VMT for soil hauling was calculated, CO_2 emissions from mobile running can be calculated by multiplying the VMT and appropriate emissions factor.

Startup emissions were calculated using the following assumptions: all vehicles were heavy heavy-duty trucks; and, two engine startups per day, with a 12 hour wait before each startup, would be required.

The total construction emissions associated with project development have been amortized over a 40-year time period, which is intended to be representative of the project's lifetime, in order to incorporate the construction-related emissions into the overall project inventory. The amortization period concept is consistent with draft guidance issued by SCAQMD.[13]

(7) Annual Emission Sources

The annual emission sources associated with the proposed project include (i) residential building energy-related emissions; (ii) nonresidential building energy-related emissions; (iii) mobile sources; (iv) the transit center; (v) municipal sources, such as water and wastewater; (vi) area sources; and, (vii) private swimming pools.

(a) Residential Buildings

GHGs are emitted as a result of activities in residential buildings that require electricity and natural gas. Combustion of any type of fuel emits CO_2 and other GHGs directly into the atmosphere; when this occurs in a residential building, it is a direct emission source associated with that building. GHGs are also emitted during the generation of electricity from fossil fuels. When electricity is used in a residential

13 "Because impacts from construction activities occur over a relatively short-term period of time, they contribute a relatively small portion of the overall lifetime project GHG emissions. In addition, GHG emission reduction measures for construction equipment are relatively limited. Therefore, SCAQMD staff is recommending that construction emissions be amortized over a 30-year project lifetime, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies." (SCAQMD, *Draft Guidance Document - Interim CEQA Greenhouse Gas (GHG) Significance Threshold* (October 2008), p. 3-8.) The emissions inventory for the proposed project utilizes a 40-year amortization period, in lieu of a 30-year period, in order to be consistent with the anticipated project lifetime.

building, the electricity generation typically takes place off site at the power plant; in such instances, electricity use in a residential building generally causes emissions in an indirect manner.

The amount of energy—and, therefore, the amount of associated GHG emissions emitted per dwelling unit—varies with the type of residential building. The major types of residential buildings planned for the proposed project include single-family detached; single-family town homes; and, multi-family attached units.

Energy use in residential buildings is divided into (1) energy consumed by the built environment, and (2) energy consumed by uses that are independent of the construction of the building, such as plug-in appliances. In California, Title 24 governs energy consumed by the built environment, including the HVAC system, water heating, and some fixed lighting. Energy use for each was calculated separately, as described below.

The resulting energy use quantities were converted to GHG emissions by multiplying by the appropriate emission factors, incorporating information on local electricity production. Although Executive Order S-14-08 mandates an increase in the RPS to 33 percent by 2020 and although the project would be operational at such time, the environmental consultant conservatively assumed that only 20 percent of the electricity would be from renewable resources, consistent with the currently enacted law.

Energy Use in the Built Environment

New Californian homes must be designed to meet statewide building energy efficiency standards (Title 24). Compliance with Title 24 is determined from the total daily valuation (TDV) of energy use in the built-environment (on a per square foot per year basis). TDV energy use is a parameter that reflects the burden that a building imposes on an electricity supply system. In general, there is a larger electricity demand and, hence, higher stress on the supply system during the day (peak times) than at night (off peak). To account for this variation, the calculation of TDV assigns different weights for energy used at different times.

To estimate Title 24 compliant energy use for space heating, space cooling, and domestic hot water systems, data from the "California Statewide Residential Appliance Saturation Study" (RASS) was used to calculate the total energy use per dwelling unit.[14] The most applicable data provided in RASS was

[14] The multi-family unit average size in the RASS dataset is similar to the proposed project's multi-family units; however, the proposed project's single-family units may be up to 13.8 percent larger than the average RASS single-family unit. Thus, the energy use associated with heating, cooling and lighting the single-family units on the project site may be slightly underestimated by the RASS data. However, if the RASS dataset is scaled to account for the larger single-family units proposed by the project, the resulting difference in emissions (approximately an additional 10 tons of carbon dioxide equivalents per year, which is just 0.064 percent of the total inventory) does not appreciably change the overall project inventory.

used to estimate the unit energy consumption values for dwelling units at the project site. Where available, data for multi-family, 5+ unit apartment types in climate zone 9, which is the climate zone in which the project site is located, was used. If multi-family or climate zone 9 data was not available, then all household or statewide data was used, respectively.

Of note, the RASS dataset is comprised of older buildings, which are typically less energy efficient (on a per square foot basis) than newer buildings constructed to meet increasingly stricter efficiency standards. Although the homes used for RASS are likely less energy efficient than Title 24-compliant buildings, the energy use estimates were assumed to represent 2001 Title 24 compliant homes. The Title 24 standards have been updated twice (in 2005 and 2008) since RASS, and CEC has published reports estimating the percentage deductions in energy use resulting from these new standards. Because buildings at the project site would conform to the most updated (and most stringent) standards, the environmental consultant accounted for the reduction in energy use resulting from the Title 24 updates by deducting the estimated percentage savings from the RASS energy use estimates.

Of note, the project applicant has committed to making all new homes 20 percent more energy efficient than 2008 Title 24 requirements. Although annual energy and TDV energy do not necessarily scale linearly with each other, the analysis assumes that all sources covered by Title 24 would uniformly use 20 percent less annual energy. For each type of home, the 2008 Title 24 compliant energy use was calculated as described above. These energy use numbers were then each multiplied by 0.80 to account for the project applicant's commitment to a 20 percent energy efficiency improvement over 2008 Title 24.

Energy Use from Major Appliances and Plug-Ins

Typical major household appliances provided in new residential units include refrigerator, clothes washer and dryer, dishwasher, and cooking range. Energy demand from using these major appliances is based on data from RASS. In addition to major appliances, additional loads such as lighting, office equipment, plug-in cooking equipment and electronics other plug-in electricity loads, such as lighting in a miscellaneous category are also part of the anticipated energy use for a residential development. Similar to the major appliances above, energy use values for plug-in appliances are based on RASS data.

The estimates for residential plug-in energy-use presented are based upon technologies that were available during the RASS survey, which was conducted in 2003. Future equipment models are likely to be more energy-efficient than current models. If future residents install Energy Star appliances, use more energy efficient equipment, and replace incandescent lights with fluorescent lights, the actual electricity use for plug-ins will be lower than is estimated here. Conversely, future residents may have more small plug-ins that could somewhat offset the savings from more energy efficient equipment. However, because refrigerators, lighting, and large appliances contribute to the bulk of the electricity load, and

these types of equipment will likely improve in energy efficiency in the future, the estimates presented here are still overestimates.

Of note, the project applicant has committed to requiring Energy Star appliances for all major appliances rated by Energy Star in newly built residences. This includes refrigerators, dishwashers, and clothes washers. (There is no Energy Star rating for dryers at this time since there is no significant difference in energy use between different dryer models. Energy Star ratings also are not available for cooking ranges.) The average energy improvement for Energy Star rated appliances over standard appliances as reported in Energy Star Annual Report was used to determine the percent reduction in energy use from major appliances.

Also, please note that the GHG emission estimates do not take into account the State of California's requirement for builders to offer solar panels as an option to homeowners. It is unknown how many future homeowners would elect to install solar panels. Therefore, while the exact reduction in CO_2 emissions due to this project design feature cannot be quantified, suffice it to say that the installation of solar panels would decrease GHG emissions from those residential buildings that choose to install renewable energy.

(b) Nonresidential Buildings

Similar to the case for residential buildings, GHGs are emitted as a result of activities in nonresidential buildings that require electricity and natural gas. Combustion of any type of fuel emits CO_2 and other GHGs directly into the atmosphere; when this occurs in a nonresidential building this is a direct emission source associated with that building. GHGs are also emitted during the generation of electricity from fossil fuels. When electricity is used in a nonresidential building, the electricity generation typically takes place off site at the power plant; in such cases, electricity use in a nonresidential building generally causes emissions in an indirect manner.

The amount of energy used and the associated GHG emissions emitted per square foot of available nonresidential space vary with the type of nonresidential building. The project applicant provided data summarizing the general nonresidential building categories planned for the project site and the area of floor space planned for each building type. The types of nonresidential buildings identified follow below:

- General Office: Administrative Office (50%); Mixed-Use Office (50%)
- Community Commercial: Retail (50%); Other Retail (50%)
- Village Commercial: Grocery Store (100%)
- Food Service: Restaurant/Cafeteria (50%); Fast Food (50%)

- Hotel: Lodging (100%)
- Public Assembly: Entertainment/Culture (100%)

Again, similar to energy use in residential buildings, energy use in nonresidential buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building, such as plug-in appliances. In California, Title 24 governs energy consumed by the built environment, mechanical systems, and some fixed lighting. Non-building energy use, or "plug-in" energy use can be further subdivided by specific end-use (refrigeration, cooking, office equipment, etc.).

The environmental consultant developed CO_2 intensity values for the nonresidential building types found on the project site using data from the 2003 Commercial Buildings Energy Consumption Survey (CBECS). The overall energy use for the building types was calculated based on data provided by the U.S. Energy Information Administration (EIA). The EIA data is based on CBECS, which was conducted in 2003. Each building type has a characteristic electricity and natural gas use per square foot of building space. Electricity use per square foot (electricity intensity) for each building sample was extracted from the EIA data for buildings in EIA climate zone 4 (includes CA climate zone 9). Similarly, the natural gas use per square foot (natural gas intensity) for each building sample was also extracted. The energy use estimates were assumed to represent 2001 Title 24 compliant buildings. The Title 24 standards have been updated twice (in 2005 and 2008) since CBECS was performed, and CEC has published reports estimating the percentage deductions in energy use resulting from these new standards.

Of note, the project applicant has committed to making all new nonresidential buildings 20 percent more energy efficient than 2008 Title 24 standards. Although annual energy use and TDV energy do not necessarily scale linearly with each other, as discussed above, the analysis assumed that all sources covered by Title 24 would uniformly use 20 percent less annual energy.[15]

The project applicant also has committed to providing the equivalent GHG emission reduction that would be generated by an 80,000-square-foot photovoltaic system. The following steps were used to estimate the emission savings from this system (or its equivalent):

1. Estimate the direct current power rating based on panel area.
2. Estimate the AC power rating based on direct current power rating and a derate factor, which accounts for energy losses due to inefficiencies as well as the effects of shading, weather and soil on system performance.

---

15 No credit has been taken for the installation of Energy Star appliances in the nonresidential building category because it is difficult to determine what appliances may be present in the various nonresidential building categories. Further, appliances are generally not supplied with nonresidential buildings, unlike residential units.

3. Estimate the total annual peak sun hours (equivalent to 1-hour exposure to 1-sun insolation) for the City of Santa Clarita.

4. Calculate the total energy generated per year.

5. Using the Southern California Edison emission factor for electricity generation, estimate the GHG emissions averted due to on-site renewable energy generation.

The total annual energy generated from an 80,000 square foot photovoltaic system is 1,327 MW-hr per year. The generation of non GHG-emitting energy results in a total GHG savings of 351 tonnes CO_2e per year.

There are other types of rooftop systems that could generate the same or greater amount of CO_2e reduction as photovoltaic systems covering the same roof area. For example, solar thermal water heating systems consist of rooftop panels through which water or a secondary heating fluid is warmed by the sun. The heated water moves from through the panel to a hot water tank. Supplemental heating from natural gas or electricity is required to keep the water at its desired temperature when the available solar heating is insufficient. Solar space heating systems operate using the same general principles; the warmed air can be circulated mechanically or via natural convection. Both of these systems reduce the natural gas and/or electricity that would otherwise be used for heating. In addition, electricity use for building cooling could be reduced by installing solar thermally driven air conditioners, which use the heat to vaporize refrigerant in an absorption chiller system. Similarly, solar hybrid lighting systems use rooftop solar concentrators to channel sunlight to light fixtures via fiber optic cables. This sunlight supplements light from the fixtures themselves.

The aforementioned technologies are currently in various stages of development and commercialization. Project construction is not projected to begin until 2012 or 2013, at which time these technologies may be more feasibly installed for commercial use. Because there are multiple existing and developing options for on-site rooftop GHG emission reduction, the project applicant prefers to retain flexibility in choosing the most suitable technology to achieve a reduction *equivalent* to an 80,000 square foot photovoltaic system.

(c) Mobile Sources

The mobile source emissions resulting from the proposed project would be attributable to the typical daily operation of motor vehicles by project residents. The emissions were estimated based upon *all* miles traveled by project residents, regardless of destination (i.e., internal or external) or purpose, and the calculations rely on information provided in the traffic analysis technical report (see **Appendix 4.3** of this EIR).

In utilizing the **Appendix 4.3** technical report, the traffic information was disaggregated into trips made by project residents and trips made by non-project residents, as well as trip lengths for different trip types (e.g., home-based work trips; home-based other trips; and, non-home based trips). The number of trips was then adjusted to account for project design features (i.e., mix of land uses) and public transit services that reduce trips.[16] Further, the consultant accounted for differences in weekend and weekday driving patterns. The consultant finally took all of these parameters into account and calculated the final project resident VMT. The total annual VMT includes all VMT generated by project residents commuting within the project site and all VMT generated by project residents commuting to and from the project site. This VMT was multiplied by the appropriate emission factor from the EMFAC2007 model to identify the resultant GHG emissions.[17]

Because N_2O, CH_4, and HFCs are also emitted from mobile sources, the U.S. EPA recommends assuming that these GHGs account for 5 percent of mobile source GHG emissions, taking into account their GWPs. Therefore, CO_2 emissions were divided by 0.95 to account for non-CO_2 GHGs.

(d) Transit Center

The proposed project contemplates a transit center, consisting of a Metrolink Station and Bus Transfer Station. Transit center GHG emissions would be associated with energy consumption from the transit center parking structure, bus berth area, and rail station platforms.

The new transit center would be larger than the existing Via Princessa Metrolink Station that it would replace, and would receive City of Santa Clarita Transit buses connecting with the new Metrolink stop. However, the vehicles that would service the transit center are not attributable to the proposed project because they do not solely serve project residents. Instead, the transit vehicles would transport people from outside the development to the project site, and would transport non-residents between points entirely outside of the project site. In addition, the analysis assumes that the addition of new transit vehicles that serve existing areas would reduce overall GHG emissions.

GHG emissions from energy consumption of building structures were calculated by multiplying the energy usage of the structures with appropriate electricity and natural gas GHG emission factors. Energy

---

16 Studies show that transit use increases in transit-oriented developments 10 years after the community is first built and occupied. Increased transit use would, in turn, reduce the average VMT for a transit-oriented development. Therefore, the VMT estimate utilized in this analysis likely is conservative.

17 The EMFAC2007 model emission factor was decreased by 20 percent to account for implementation of California's AB 1493 vehicle standards. It also should be noted that changes in estimated fleet distribution and emission factors will likely improve based on anticipated regulations, over and above those currently enacted in law.

consumption was estimated using data provided by the CEC, specifically the 2006 Commercial End-Use Survey (CEUS) data. The CEUS "Miscellaneous" building category includes automobile parking; data from this category was used for the proposed parking structure, bus station and train platforms. The "All Office" data was used for the parking structure security office.

Total energy use of the transit center structures was determined by multiplying the CEUS energy use intensities by the net *new* area of the transit center. The size of the parking structure security office was provided by the project applicant, while the size of the parking structure, Bus Transfer Station, and Metrolink Station platforms were extracted from the project site plan/tentative tract map prepared by Alliance Land Planning and Engineering (December 2009). The sizes of the existing parking area and Metrolink platforms were estimated from aerial photographs.

(e) Municipal Sources

(1) Water and Wastewater Supply and Treatment Systems

In general, the majority of municipal sector GHG emissions are related to the energy used to convey, treat and distribute water and wastewater. Thus, these emissions are generally indirect emissions from the production of electricity to power these systems. Additional emissions from wastewater treatment include CH_4 and N_2O, which are emitted directly from the wastewater.

The amount of electricity required to treat and supply water depends on the volume of water involved. The proposed project would generate a total water demand of 118 million gallons per year. Of this, 78 million gallons per year would be potable water supplied by the Santa Clarita Water Division (SCWD) of the Castaic Lake Water Agency (CLWA), and 40 million gallons per year will be non-potable recycled water.[18] Three processes are necessary to supply potable water to residential and commercial users: (1) supply and conveyance of the water from the source; (2) treatment of the water to potable standards; and (3) distribution of the water to individual users. After use, the wastewater is treated and reused as recycled water.[19]

[18] CLWA-SCWD expects that the potable water for Vista Canyon will be supplied from two different sources: the State Water Project (61 percent) and local groundwater (39 percent).

[19] The proposed project would generate more recycled water than it has demand; however, in the long term, the surrounding area would make use of the recycled water generated on the project site. Thus, a reduction in CO_2e emissions to account for surrounding areas being able to use recycled water was taken.

Indirect emissions resulting from electricity use were determined by multiplying electricity use by the CO_2 emission factor provided by the local electricity supplier. Energy use for different aspects of water treatment was determined using the stated volumes of water and energy intensities values identified in relevant reports.

(2) Public Lighting

Lighting sources contribute to GHG emissions indirectly, via the production of the electricity that powers these lights. Lighting sources considered in this source category include streetlights, traffic signals, area lighting for parks and lots, and lighting in public buildings. Data from a report prepared by the City of Duluth was used to identify the amount of electricity demanded for all types of public lighting. The environmental consultant then used the carbon-intensity emission factor from the local retail energy supplier and expected project population to calculate emissions. The emission estimate is likely conservative as (i) the proposed project is a master-planned compact community and may require fewer lights than the City of Duluth, and (ii) the project applicant would install energy-efficient municipal lighting, where feasible.

(3) Municipal Vehicles

GHG emissions from municipal vehicles are due to direct emissions from the burning of fossil fuels. Municipal vehicles considered in this source category include vehicles such as police cars, fire trucks, and garbage trucks. In order to calculate the emissions resulting from municipal vehicle operation, the total project population and data from reports prepared by Medford, MA; Duluth, MN; Northampton, MA; and Santa Rosa, CA were utilized.

(f) Area Sources

Area sources emissions stem from hearths (including gas fireplaces, wood-burning fireplaces, and wood-burning stoves) and small mobile fuel combustion sources, such as landscaping equipment. For residential areas, landscape-based GHG emissions are directly related to the number of residential units, the annual equipment usage rate, and landscape equipment CO_2 emissions factors. Fuel combustion associated with these sources produce direct GHG emissions. However, according to the project applicant, there will be no fireplaces in the residential units. Thus, the area source emission estimate includes lawn maintenance equipment only and is based on the URBEMIS method.

(g) Private Swimming Pools

The project site could have up to six private residential swimming pools, which would generate indirect GHG emissions due to energy use that is mainly attributed to filter pumps. (According to the project

applicant, pools at the project site would be solar-heated; as a result, no energy would be required for pool heating.) Annual pool pump use was estimated as the annual California average provided in a 2004 study (2,600 kWh/year) minus the estimated savings from the 2008 Appliance Efficiency Standards (1,088 kWh/year).

(8) GHG Emissions Resulting from Project Approval

Table 4.22-2, **Summary of GHG Emissions from Project Approval**, identifies the GHG emissions total associated with construction, build-out and operation of the proposed project. As identified in **Table 4.22-2**, the proposed project would result in 15,892 metric tons of annualized GHG emissions per year.[20]

More specifically, as shown, one-time vegetation emissions are estimated to -105 tonnes CO_2e, indicating a net decrease. One-time construction emissions are estimated to be 21,397 tonnes CO_2e. Emissions from mobile sources are estimated to be 7,460 tonnes CO_2e per year, which represents 49 percent of the annual emissions. Emissions associated with the transit center are estimated to be 49 tonnes CO_2e per year, or less than 1 percent of the total annual emissions estimate. Emissions from residential buildings amount to 2,728 tonnes CO_2e per year and comprise 18 percent of the annual project emissions. Emissions from nonresidential buildings amount to 4,652 tonnes CO_2e per year and comprise 30 percent of the annual project emissions (after accounting for the energy savings (351 tonnes) provided by generating on-site renewable energy). Emissions from municipal sources (water distribution, public lighting, and municipal vehicles) amount to 468 tonnes and are estimated to be 3 percent of the annual project emissions. Emissions from area sources (fireplaces and lawn maintenance) and private swimming pools are estimated to be 3 tonnes, or less than 1 percent of annual project emissions.

The **Table 4.22-2** emission estimates take into account California's AB 1493 vehicle standard regulations and RPS. The emission estimates also were calculated in accordance with the methodologies described above and further detailed in **Appendix 4.22**.

[20] This emissions estimate, which is expressed as carbon dioxide equivalents, accounts for the following types of greenhouse gases: CO_2; CH_4; and N_2O. Other GHGs are not accounted for in the inventory as they would not be emitted in appreciable quantities.

Table 4.22-2
Summary of GHG Emissions from Project Approval

Source	GHG Emissions		Percentage of Annual CO_2e Emissions (%)
Vegetation		-105	NA
Construction (Commuting and Vendor Trips)	tonnes CO_2e total	12,013	NA
Construction (All other construction activities)		9,384	NA
Total (one-time emissions)		**21,292**	NA
Residential	tonnes CO_2e/year	2,728	18%
Nonresidential		4,652	30%
Mobile		7,460	49%
Transit Center		49	0%
Swimming Pools		2	0%
Municipal		468	3%
Area		1	0%
Total (annual emissions)		**15,360**	NA
Annualized Total	tonnes CO_2e/year	**15,892**	**NA**

As identified in **Table 4.22-2**, the proposed project would increase emissions levels by 15,892 metric tonnes of annualized GHG emissions per year above existing, on-site conditions, which conservatively are assumed to be zero.[21] (But see, *supra*, discussion of existing emission levels on the project site, which are approximately 18 metric tonnes of CO_2e per year.) While this numeric increase (i.e., approximately 15,892 tonnes) represents an obvious change to existing, on-site conditions (of roughly 18 tonnes), the increase, alone, is not sufficient to support a significance determination because of the absence of scientific and factual information regarding when particular quantities of greenhouse gas emissions become significant (as climate change is a global issue). Accordingly, and as discussed further below, the analysis also considers whether the proposed project's emissions would impede the State of California's compliance with the statutory emissions reduction mandate established by AB 32.

As noted earlier, AB 32 requires that statewide GHG emission in 2020 be equal to 1990 levels. California-wide GHG emissions in 1990 were 0.427 billion tonnes, and it is projected that emissions in 2020 under a

[21] This emissions estimate, which is expressed as carbon dioxide equivalents, accounts for the following types of greenhouse gases: CO_2; CH_4; and N_2O. Other GHGs are not accounted for in the inventory as they would not be emitted in appreciable quantities.

CARB 2020 NAT scenario accounting for growth would be 0.596 billion tonnes. This would require a 28.5 percent decrease in emissions from CARB 2020 NAT by 2020 to achieve AB 32 goals.[22] Of note, while the 28.5 percent emission reduction is treated in this analysis as a sector-wide reduction requirement, various sectors will, in fact, be responsible for various reduction requirements. That is, not every sector (e.g., industry; ports; power generation; land use; etc.) is responsible for achieving a 28.5 percent reduction. In fact, it was recently determined that the land use/housing sector will not need to achieve a 28.5 percent reduction. An analysis of CARB's December 2008 Scoping Plan conducted by the Bay Area Air Quality Management District showed that the emissions attributable to "land use-driven" sectors need to demonstrate a 26.2 percent reduction in GHG emissions by 2020.[23] Therefore, utilization of a 28.5 percent emissions reduction in this analysis to establish consistency with AB 32 may be conservative.

In order to put the GHG emission inventory into context and justify an improvement heading towards meeting the reduction goals set for 2020, it is necessary to compare the proposed project's GHG emission inventory to the GHG emissions that would occur from a community that would be built today without (i) the project design features and energy reduction commitments made by the project applicant, and (ii) the regulations that have been promulgated to comply with AB 32.[24] This baseline comparison is referred to as the CARB 2020 NAT scenario, and was used by CARB to estimate the required 28.5 percent emissions reduction.

As shown in **Table 4.22-3**, below, the proposed project would exceed the CARB 2020 NAT scenario by at least 28.8 percent. Therefore, the project would not impede compliance with the GHG emission

---

22 Of note, in order to achieve AB 32-mandated goals, California's per capita emissions would have to be 10.1 tonnes CO_2e. The proposed project has an estimated 4.6 tonnes per capita per year, and the proposed project with the residential overlay option has an estimated 4.1 tonnes per capita per year. However, the California per capita CO_2 emissions quantity includes industries (such as heavy industry, refining, and transportation of materials) that re not reflected in the project per capita emissions total. Therefore, the data does not provide for an apples-to-apples comparison.

23 See Bay Area Air Quality Management District, *California Environmental Quality Act Guidelines Update: Proposed Thresholds of Significance* (November 2, 2009), pp. 10-11, 14 [identifying 26.2 percent reduction requirement, and the "land use-driven" sectors as including transportation (on-road passenger vehicles, on-road heavy duty); electric power (electricity, cogeneration); commercial and residential (residential fuel use, commercial fuel use); and recycling and waste (domestic waste treatment)].

24 The CARB 2020 NAT scenario analysis assumes that the project site would be developed for a residential use, even though the site currently is not designated or zoned for residential uses. This assumption is reasonable because AB 32 does not establish regional reduction targets based on current zoning, thereby limiting the relevance of current, on-site zoning. Instead, AB 32 establishes a statewide reduction target. Moreover, CARB's emission estimates for 2020 accounted for growth projections, and corresponding population increases. It is reasonable to assume that it may be necessary to re-zone property to accommodate such population increases via the construction of additional housing. Finally, it would be difficult and possibly not meaningful to compare the emissions associated with development under the current zoning (i.e., agricultural and light industrial) with the proposed mixed-use development.

reductions mandated in AB 32. As such, the proposed project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, and impacts would be less than significant.

Table 4.22-3
Analysis of Proposed Project under CARB 2020 NAT Scenario

Source	CARB 2020 NAT	Vista Canyon[7]	Percentage Improvement over CARB 2020 NAT[1]
	GHG Emissions (tonnes CO_2e/year)		(%)
Vegetation	-105	-105	0%
Construction	21,397	21,397	0%
Total (one-time emissions)	**21,292**	**21,292**	**0%**
Residential[2]	3,413	2,728	20%
Nonresidential[3]	6,308	4,652	26%
Total Transportation[4]	11,378	7,509	34%
Mobile	*11,378*	*7,460*	--
Transit Center	*0*	*49*	--
Municipal[5]	685	468	32%
Area	1	1	--
Swimming Pools	2	2	--
Total (annual emissions)	**21,787**	**15,360**	**29.5%**
Annualized Total[6]	**22,319**	**15,892**	**28.8%**

Notes:

1. *The percentage improvement over CARB 2020 NAT is an estimate. There are some source categories where appropriate comparisons are available. It is estimated that this value is conservative.*
2. *CARB 2020 NAT residential emissions reflect minimally 2005 Title-24 compliant homes without Energy Star appliances.*
3. *Project scenario assumes 20% improvement over 2008 Title 24 and 351 tonnes GHG reduction from on-site rooftop energy systems. CARB 2020 NAT non-residential emissions reflect minimally 2005 Title-24 compliant buildings and no GHG emission reductions from on-site energy systems.*
4. *CARB 2020 NAT scenario for transportation assumes no transit center and a VMT of 71 miles per dwelling unit per day, based on Fehr and Peers' analysis of a scenario where no non-residential land uses and no public transit center are present.*
5. *Municipal emissions included here are related to water treatment, waste water treatment, street lighting, and municipal vehicles. The CARB 2020 NAT scenario assumes that no recycled water will be used on site or sent for use off site.*
6. *One-time emissions are annualized over 40 years and then added to the total annual emissions.*

Abbreviations:
CARB 2020 NAT – California Air Resources Board 2020 No Action Taken

(a) Life-Cycle Analysis

Life-cycle emissions include all of the emissions caused by the existence of a product or project; for example, GHG emissions from the processes used to manufacture and transport materials used in the buildings and infrastructure. The life-cycle emissions estimate provided below is to be used for comparison purposes only and is not included in the final inventory as these emissions would be accounted for under AB 32 in other industry sectors; inclusion of the emission estimates likely would result in double-counting. In addition, life-cycle analyses inherently involve many uncertainties. For example, in a life-cycle analysis for building materials, somewhat arbitrary boundaries must be drawn to define the processes considered.[25] The applicability of information to a specific geographic location, climatic zone and building type also can influence the life-cycle GHG emissions. Further uncertainty of life-cycle analyses come from some basic choices, such as the useful life of a building or road, which can substantially change the outcome of the life-cycle analysis. Recognizing the uncertainties associated with a life-cycle analysis, the California Air Pollution Control Officers Association (CAPCOA) released a white paper that states: "The full life-cycle of GHG emissions from construction activities is not accounted for in the modeling tools available, and the information needed to characterize GHG emissions from manufacture, transport, and end-of-life of construction materials would be speculative at the CEQA analysis level."[26]

The life-cycle emissions analyzed relate to the materials for (i) residential and nonresidential buildings, and (ii) site infrastructure. According to available literature, approximately 3 to 25 percent of GHG emissions from buildings are associated with energy usage during the operational phase; the balance of the GHG emissions are due to material manufacture and transport. Using the GHG emissions from the operation of buildings, 3 to 25 percent of building emissions corresponds to approximately 0.03 to 0.29 percent of project emissions. With respect to site infrastructure (e.g., roads, storm drains, utilities, gas, electricity, and cable), the analysis considered the manufacture and transport of concrete and asphalt only, as other construction materials presumably would be present in much smaller quantities. Because the manufacture of concrete has a higher CO_2 emission factor and most construction estimates higher quantities of concrete than asphalt, the majority of the emissions for infrastructure result from the manufacture of concrete. Because the asphalt and concrete are locally sourced, the transportation emissions are relatively small. If a 40-year lifespan of the infrastructure is assumed, the total annualized

---

25 More specifically, in the case of building materials, the boundary could include the energy to make the materials, the energy used to make the machine that made the materials, or the energy used to make the machine that made the machine that made the materials.

26 CAPCOA, *CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act* (January 2008), p. 65.

emissions from embodied energy in infrastructure materials would be approximately 0.25 percent of project emissions.

The overall life-cycle emissions from construction materials would be approximately 46 to 87 tonnes CO_2/year, which represents between 0.29 and 0.54 percent of the annualized GHG emissions total, assuming a 40-year lifespan of the project.

(9) GHG Emissions Resulting from Project Approval with Implementation of the Residential Overlay Option

Additional inventory calculations, using the same methodologies described above, were performed for the residential overlay option, which would result in the build-out of 1,350 dwelling units and 700,000 square feet of nonresidential space (instead of 1,117 dwelling units and approximately 950,000 square feet of nonresidential space). Emissions related to the transit center, vegetation, area sources and swimming pools were assumed to be equal in both scenarios (i.e., the proposed project without the residential overlay and the proposed project with the residential overlay).

Table 4.22-4, **Summary of GHG Emissions from Project Approval with Residential Overlay Option**, identifies the GHG emissions associated with construction, build-out and operation of the proposed project. As identified in **Table 4.22-4**, the proposed project would result in 17,038 tonnes of annualized GHG emissions per year (approximately 7.2 percent higher than the proposed project without the residential overlay option scenario).

More specifically, as shown in **Table 4.22-4**, the overlay option emissions are unchanged for vegetation, transit center, area sources and swimming pools. Annual emissions from nonresidential buildings (3,676 tonnes per year) and one-time emissions from construction (20,069 tonnes) are lower due to the decrease in office space. Emissions from the remaining sources are higher due to the increase in dwelling units and thus in population: 3,245 tonnes for residential buildings; 9,016 for mobile sources, and 550 tonnes for municipal sources.

Table 4.22-4
Summary of GHG Emissions from Project Approval with Residential Overlay Option

Source	GHG Emissions		Percentage of Annual CO_2e Emissions (%)
Vegetation		-105	NA
Construction (Commuting and Vendor Trips)	tonnes CO_2e total	10,684	NA
Construction (All other construction activities)		9,384	NA
Total (one time emissions)		**19,963**	**NA**
Residential	tonnes CO_2e/year	3,245	20%
Nonresidential		3,676	22%
Mobile		9,016	55%
Transit Center		49	0%
Swimming Pools		2	0%
Municipal		550	3%
Area		1	0%
Total (annual emissions)		**16,539**	**NA**
Annualized Total	tonnes CO_2e/year	**17,038**	**NA**

As shown in **Table 4.22-5**, below, the proposed project (with implementation of the residential overlay option) would exceed the CARB 2020 NAT scenario by at least 29.4 percent. Therefore, the project would not impede compliance with the GHG emission reductions mandated in AB 32. As such, the proposed project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, and impacts would be less than significant.

Table 4.22-5
Analysis of Proposed Project with Residential Overlay Option under CARB 2020 NAT Scenario

Source	CARB 2020 NAT	Vista Canyon	Percentage Improvement over CARB 2020 NAT[1]
	GHG Emissions (tonnes CO_2e/year)		(%)
Vegetation	-105	-105	0%
Construction	20,069	20,069	0%
Total (one-time emissions)	**19,963**	**19,963**	**0**%
Residential[2]	4,055	3,245	20%
Nonresidential[3]	5,054	3,676	27%
Total Transportation[4]	13,751	9,065	34%
Mobile	*13,751*	*9,016*	--
Transit Center	*0*	*49*	--
Municipal[5]	762	550	28%
Area	1	1	--
Swimming Pools	2	2	--
Total (annual emissions)	**23,625**	**16,539**	**30.0**%
Annualized Total[6]	**24,124**	**17,038**	**29.4**%

Notes:

1. *The percentage improvement over CARB 2020 NAT is an estimate. There are some source categories where appropriate comparisons are available. It is estimated that this value is conservative.*
2. *CARB 2020 NAT residential emissions reflect minimally 2005 Title-24 compliant homes without Energy Star appliances.*
3. *CARB 2020 NAT non-residential emissions reflect minimally 2005 Title-24 compliant buildings and no GHG emission reductions from on-site energy systems.*
4. *CARB 2020 NAT scenario for transportation assumes no transit center and a VMT of 71 miles per dwelling unit per day, based on Fehr and Peers' analysis of a scenario where no non-residential land uses and no public transit center are present.*
5. *Municipal emissions included here are related to water treatment, waste water treatment, street lighting, and municipal vehicles. The CARB 2020 NAT scenario assumes that no recycled water will be used on site or sent for use off site.*
6. *One-time emissions are annualized over 40 years and then added to the total annual emissions.*

Abbreviations:
CARB 2020 NAT – California Air Resources Board 2020 No Action Taken

(10) Plan, Policy and Regulation Consistency

As previously discussed, Appendix G of the *State CEQA Guidelines* has been revised to include criteria applicable to greenhouse gas emissions. One of the criterion asks whether the project would "conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. As discussed further below, the proposed project would not conflict with any adopted plan, policy or regulation; therefore, the project's impacts are less than significant with respect to this criterion.

- CARB Scoping Plan – The proposed project would comply with all applicable regulations adopted by CARB and other regulatory agencies to implement the Scoping Plan pursuant to AB 32.

- Executive Order S-3-05 – The proposed project, through implementation of project design features, would not impede achievement of the statewide goal of reducing GHG emissions to 1990 levels by 2020.

- California Code of Regulations, Title 24 – The proposed project would exceed the 2008 Title 24 standards by 20 percent, thereby demonstrating a commitment to the energy efficient design, construction and operation of residential and non-residential structures.

- Senate Bill 375 – The proposed project is a transit-oriented development and is consistent with the objective of SB 375 to improve land use planning decisions at the local level by locating a mix of land uses in close proximity to one another and transit options.

- Reduction Strategies – As demonstrated below in **Tables 4.22-6** and **4.22-7**, the proposed project is consistent with various reduction strategies recommended by the California Attorney General's Office and Climate Action Team for purposes of reducing greenhouse gas emissions.

At present time, the City has not adopted any applicable plans, policies, or regulations for which project consistency can be assessed. Nonetheless, in light of the project's consistency with the state programs and efforts identified above, the project's impacts are not significant under the referenced criterion.

(11) California's Long-Term (2050) Reduction Goal

As previously discussed, Executive Order S-03-05 mandates that California emit 80 percent less GHGs in 2050 than it emitted in 1990. As of 2004, California was emitting 12 percent more GHG emissions than in 1990. For California to emit 80 percent less than it emitted in 1990, the emissions would need to be only 18 percent of the 2004 emissions. Accounting for a population growth from 35,840,000 people in 2004 to approximately 55,000,000 people in 2050, the emissions per capita would have to be only 12 percent of what they were in 2004. This means 88 percent reductions in per capita GHG emissions from today's emissions intensities must be realized in order to achieve California's 2050 GHG goals.

CARB's Scoping Plan provides insight as to how it anticipates California will achieve the 2050 reduction goal in Governor Schwarzenegger's Executive Order S-03-05:

> Reducing our greenhouse gas emissions by 80 percent will require California to *develop new technologies* that dramatically reduce dependence on fossil fuels, and *shift into a landscape of new ideas, clean energy, and green technology*. The measures and approaches in this plan are designed to accelerate this necessary transition, promote the rapid development a cleaner, low carbon economy, create vibrant livable

> communities, and improve the ways we travel and move goods throughout the state.
>
> …
>
> [T]he measures needed to meet the 2050 goal are too far in the future to define in detail …

(*Climate Change Proposed Scoping Plan: A Framework For Change*, California Air Resources Board (adopted December 2008), p. ES-2; italics added.)

The CEC and CARB also have published an alternative fuels plan that identifies[27] "challenging but plausible ways to meet 2050 [transportation] goals." The main finding from this analysis is that reducing today's average per capita driving miles by about 5 percent (or back to 1990 levels), in addition to the decarbonization strategies listed below, would achieve Governor Schwarzenegger's goal to reduce transportation-related emissions to 80 percent below the 1990 levels. The approach described below is from the CEC/CARB report: [28]

An 80 percent reduction in GHG emissions associated with personal transportation can be achieved even though population grows to 55 million, an increase of 50 percent. The following set of measures could be combined to produce this result:

1. Lowering the energy needed for personal transportation by tripling the energy efficiency of on-road vehicles in 2050 with:
    a. Conventional gas, diesel, and flexible fuel vehicles (FFVs) averaging more than 40 miles per gallon (mpg).
    b. Hybrid gas, diesel, and FFVs averaging almost 60 mpg.
    c. All electric and plug-in hybrid electric vehicles (PHEVs) averaging well over 100 mpg (on a greenhouse gas equivalents (GGE) basis) on the electricity cycle.
    d. Fuel cell vehicles (FCVs) averaging over 80 mpg (on a GGE basis).
2. Moderating growth in per capita driving, reducing today's average per capita driving miles by about 5 percent or back to 1990 levels.

---

27 See *State Alternative Fuels Plan*, California Energy Commission and California Air Resources Board, available online at http://www.energy.ca.gov/2007publications/CEC-600-2007-011/CEC-600-2007-011-CMF.PDF (last visited February 11, 2009). This report is available for public inspection and review at Los Angeles County Department of Regional Planning, 320 West Temple Street, Los Angeles, California 90012, and is incorporated by reference.

28 *Id*. at pp. 67-68.

3. Changing the energy sources for transportation fuels from the current 96 percent petroleum-based to approximately:

    a. 30 percent from gasoline and diesel from traditional petroleum sources or lower GHG emission fossil fuels such as natural gas.

    b. 30 percent from transportation biofuels.

    c. 40 percent from a mix of electricity and hydrogen.

4. Producing transportation biofuels, electricity, and hydrogen from renewable or very low carbon-emitting technologies that result in, on average, at least 80 percent lower life cycle GHG emissions than conventional fuels.

5. Encouraging more efficient land uses and greater use of mass transit, public transportation, and other means of moving goods and people.

Setting aside the CEC and CARB's preliminary plans with respect to the transportation sector, significant and drastic changes will need to be made across every economic sector to reduce emissions to 80 percent below 1990 levels by 2050. In light of the uncertainties regarding the specific reduction strategies and methods needed for California to achieve the 2050 reduction goal identified in Governor Schwarzenegger's Executive Order S-03-05, the impact of the proposed project on the 2050 reduction goal is considered too speculative to assess at this time. (See *State CEQA Guidelines*, Section 15145.)

c. Impact of Global Climate Change on Project

Potential effects of global climate change on the proposed project include:

Sea Level: Rising sea levels are unlikely to directly impact the project site due to its distance from the coast and relative elevation.

Temperature: Rising temperatures could have a variety of impacts, including stress on sensitive populations (e.g., sick and elderly), additional burden on building systems (e.g., demand for air conditioning), and, indirectly, increasing emissions of GHG emissions and criteria pollutants associated with energy generation. It is not possible to reliably quantify these risks at this time.

Sensitive Biological Resources: Rising temperatures and changing water supply availability may influence the distribution of biological resources. While it is not possible to reliably assess these risks on a species-by-species basis at this time, please see **Appendix 4.22** for a survey of available literature on the interface between global climate change and sensitive biological resources.

Precipitation: Climate change is expected to alter seasonal and inter-annual patterns of precipitation. These changes continue to be one of the most uncertain aspects of future scenarios. For this proposed project, the most relevant and direct impacts are likely to be changes in the timing and volume of storm water runoff and changes in the demand for irrigation. It is not possible to reliably quantify these changes or their implications at this time.

Wildfire: Changes in temperature and precipitation may combine to alter risks of wildfire. Further, changes in wildfire hazard have the potential to impact the project site. However, it is not possible to reliably quantify the implications of these changes at this time. That said, please see **Section 4.13**, Fire Services, for an assessment of the proposed project's impacts on the local fire department.

Water Supply Reliability: Changes in temperature and precipitation may also influence seasonal and inter-annual availability of water supplies. Consequently, it is reasonable to consider that climate change may affect water supply reliability. However, it is not possible to reliably quantify these risks for the project at this time. For more information on the project's water supply, please refer to **Section 4.8**, Water Services, and **Appendix 4.22**, which contains a survey of available literature on the interface between global climate change and water resources.

4. MITIGATION MEASURES ALREADY INCORPORATED INTO THE PROJECT

a. Applicable Project Design Features

To preface, direct reference should be made to the proposed Vista Canyon Specific Plan, which contains a comprehensive assessment of the components of the proposed project that promote sustainable development. More specifically, the proposed Specific Plan includes a climate action plan component that defines the attributes of the project design that would reduce greenhouse gas emissions,

As identified and described in the inventory of GHG emissions that would result from the proposed project, numerous project design features lessen the proposed project's estimated emissions total. In order to ensure that these project design features are implemented, they are recommended here as specific mitigation measures. Therefore, if approved, these project design features/mitigation measures would become part of the legally enforceable mitigation monitoring and reporting program, required by CEQA, for the Vista Canyon Specific Plan.

- The project applicant or designee shall design all residential buildings on the project site to provide improved insulation and ducting, low E glass, high efficiency air conditioning units, and radiant barriers in attic spaces, as needed, or equivalent to ensure that all residential buildings operate at

levels 20 percent better than the standards required by the 2008 version of Title 24 at the time building permit applications are filed

- The project applicant or designee shall provide Energy Star major appliances, where available and applicable, in all residential and commercial buildings on the project site.

- The project applicant or designee shall design all nonresidential buildings on the project site to provide improved insulation and ducting, low E glass, high efficiency HVAC equipment, and energy efficient lighting design with occupancy sensors or equivalent to ensure that all commercial and public buildings operate at levels 20 percent better than the standards required by the 2008 version of Title 24 at the time building permit applications are filed

- The project applicant or designee shall produce or purchase renewable electricity equivalent to the installation of an 80,000 square foot photovoltaic rooftop power system on residential or non-residential buildings on the project site.

- Consistent with the Governor's Million Solar Roofs Plan, the project applicant or designee, acting as the seller of any single-family residence constructed as part of the development of at least 50 homes that are intended or offered for sale, shall offer a solar energy system option to all customers that enter negotiations to purchase a new production home constructed on land for which an application for a tentative subdivision map has been deemed complete. The seller shall disclose the total installed cost of the solar energy system option, and the estimated cost savings.[29]

- The project applicant or designee shall use solar water heating for all pools located on the project site.

In addition to the mitigation measures identified above, various other project design features/mitigation measures identified in this Draft EIR would reduce the proposed project's GHG emissions and/or improve the project's capacity to respond to the uncertain effects of global climate change. For example, the proposed project's reliance on recycled water for landscaping irrigation purposes, as well as for toilet facilities in retail, office and commercial spaces, reduces the proposed project's water demand. A reduced water demand results in less GHG emissions because less energy is devoted to the long-distance transport and treatment of water. As such measures are recommended for adoption and incorporation into a mitigation monitoring and reporting program, these measures can be relied upon in this analysis as feasible measures designed to reduce GHG emissions and the impact of global climate change on the project.

---

29 Please note that the emission inventory results presented in this section do *not* attribute an emissions reduction to this mitigation measure as it is not known how many future residents of the single-family residences proposed for the project site would elect to have a solar energy system installed. To the extent that future residents do request the installation of such a system, the emission inventory results presented in this section for building energy use likely are over-stated.

b. Additional Potentially Feasible Mitigation Programs

In addition to the mitigation measures set forth above, the project applicant also is pursuing implementation of two potentially feasible programs that may result in further reductions of CO_2e per year. The feasibility of the following two programs is still uncertain, but nonetheless the project applicant has committed to working with the City of Santa Clarita, Southern California Edison and Southern California Gas Company with respect to each program.

(1) Energy Efficient Municipal Lighting Program

The project applicant is committed to working with the City of Santa Clarita and Southern California Edison to install, where feasible, energy efficient municipal lighting throughout the project site. Annual energy costs associated with municipal lighting are lowered by 16 to 40 percent via the use of energy efficient lighting.

(2) Smart Meter Program

The project applicant is committed to working with Southern California Edison and Southern California Gas Company to assess the feasibility of installing smart meters at residential units throughout the project site. Although the GHG emissions reductions achieved via the implementation of a smart meter program are uncertain and there do not appear to be any authoritative references that outline the overall energy savings from smart meters, numerous studies suggest that smart meters can reduce peak demand by 10 to 20 percent and energy costs from appliance use by approximately 10 percent.[30]

c. Consistency of Project with Greenhouse Gas Reduction Strategies Recommended by State Agencies

For information purposes, an assessment of the proposed project's compatibility with GHG emission reduction strategies recommended by the California Attorney General's Office and Climate Action Team is provided below. **Table 4.22-6**, **Compatibility with the California Attorney General GHG Emission Reduction Strategies**, and **Table 4.22-7**, **Compatibility with Climate Action Team GHG Emission Reduction Strategies**, identify the recommended mitigation measures and assess whether the proposed project is compatible with those measures or if the measures are applicable.

---

30 Smart meters are designed to transmit usage directly to the utility provider, thereby eliminating the need for door-to-door meter reading. The elimination of door-to-door meter reading would reduce overall GHG emissions further, by eliminating vehicle emissions.

Table 4.22-6
Compatibility with California Attorney General GHG Emission Reduction Strategies

Measure	Compatibility of Project
Energy Efficiency	
Design buildings to be energy efficient. Site buildings to take advantage of shade, prevailing winds, landscaping and sun screens to reduce energy use.	*Compatible:* All residential and nonresidential land uses included in the proposed project would be at least 20 percent more energy efficient than Title 24 requires, and, where specified, may rely on renewable energy sources to satisfy the project's energy demands. The project applicant would use its best efforts to site buildings to take advantage of shade, prevailing wind, etc. to reduce energy use. Therefore, the proposed project would further implementation of this reduction strategy.
Install efficient lighting and lighting control systems. Use daylight as an integral part of lighting systems in buildings.	*Compatible:* The project applicant is committed to working with the City of Santa Clarita and Southern California Edison to install, where feasible, energy efficient municipal lighting throughout the project site. Although the exact parameters and feasibility of the program have not been determined, it is estimated that the installation of energy efficient municipal lighting would result in GHG emission reductions. Therefore, the proposed project would further implementation of this reduction strategy.
Install light colored "cool" roofs, cool pavements, and strategically placed shade trees.	*Compatible:* The project site currently is mostly vacant. In building out the proposed project, the applicant would utilize light-colored roofs (where architectural requirements permit), cool pavement (within the parking structures and on permeable pavement areas) and plant approximately 2,100 new trees. The inclusion of new vegetation also would increase shade throughout the project site. Therefore, the proposed project would further implementation of this reduction strategy.
Provide information on energy management services for large energy users.	*Not Applicable:* The land uses that would be built on the project site would not be considered large energy users (e.g., electricity providing utility; industrial-related business; etc.).
Install energy efficient heating and cooling systems, appliances and equipment, and control systems.	*Compatible:* As discussed throughout this section, the proposed project's residential and nonresidential land uses would be at least 20 percent more efficient than required by Title 24. In addition, the proposed project would include Energy Star major appliances in all residential units and applicable commercial uses, where available. Further, the applicant is committed to working with Southern California Edison and Southern California Gas Company to assess the feasibility of installing smart meters at residential units located throughout the project site. The GHG emissions reductions achieved via the implementation of a smart meter program are uncertain. Therefore, the proposed project would further implementation of this reduction strategy.

Measure	Compatibility of Project
Install light emitting diodes (LEDs) for traffic, street, and other outdoor lighting.	*Compatible:* The project applicant is committed to working with the City of Santa Clarita and Southern California Edison to install, where feasible, energy efficient municipal lighting throughout the project site. Therefore, the proposed project would further implementation of this reduction strategy.
Limit the hours of operation of outdoor lighting.	*Compatible:* The project applicant would include provisions within the project covenant, codes and restrictions (CC&Rs) that would restrict outdoor lighting during overnight hours to security lighting only.
Use solar heating, automatic covers, and efficient pumps and motors for pools and spas.	*Compatible:* The project applicant is committed to using solar water heating for any swimming pools located on the project site. Therefore, the proposed project would further implementation of this reduction strategy.
Provide education on energy efficiency.	*Compatible*: As noted above, the applicant is committed to working with Southern California Edison and Southern California Gas Company to assess the feasibility of installing smart meters at residential units, which help educate residents about their energy consumption. It also should be observed that Southern California Edison has established an energy efficiency education program in order to ensure that its energy users are informed of existing opportunities to decrease their overall demand for energy. Moreover, in September 2008, the U.S. EPA launched a new online tool—Energy Star & Work, to provide individuals with tips and information on how to save energy and protect the environment in the workplace. Therefore, the proposed project would further implementation of this reduction strategy.
Renewable Energy	
Install solar and wind power systems, solar and tankless hot water heaters, and energy-efficient heating ventilation and air conditioning. Educate consumers about existing incentives.	*Compatible:* The project applicant is committed to the production or purchase of renewable electricity equivalent to the installation of an 80,000 square foot photovoltaic rooftop power system in connection with the residential and/or nonresidential buildings that would be located on the project site. Therefore, the proposed project would further implementation of this reduction strategy.
Use solar panels on carports and over parking areas.	*Compatible:* As discussed above, the project applicant would use renewable electricity, equivalent to the installation of an 80,000 square foot photovoltaic rooftop power system in connection with the residential and/or nonresidential buildings that would be built on the project site. Therefore, the proposed project would further implementation of this reduction strategy.
Use combined heat and power in appropriate applications.	*Not Applicable*: Cogeneration (also known as combined heat and power) is the use of a heat engine or power station to simultaneously generate electricity and heat. The land uses that would be built at the project site do not lend themselves to cogeneration.

Measure	Compatibility of Project
Water Conservation and Efficiency [1]	
Create water-efficient landscapes.	*Compatible:* The project applicant is committed to using native and drought-tolerant vegetation when revegetating the project site. Therefore, the proposed project would further implementation of this reduction strategy.
Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls.	*Compatible:* The proposed project would rely on evapotranspiration (i.e., weather-sensitive sprinklers) to reduce water demand and runoff. Therefore, the proposed project would further implementation of this reduction strategy.
Use reclaimed water for landscape irrigation in new developments and on public property. Install the infrastructure to deliver and use reclaimed water.	*Compatible:* The proposed project would use reclaimed/recycled water for landscape irrigation, and the infrastructure needed to deliver and use this water would be provided on site. Therefore, the proposed project would further implementation of this reduction strategy.
Design buildings to be water-efficient. Install water-efficient fixtures and appliances.	*Compatible:* The proposed project's design features would comply with all applicable state, regional, and local regulations regarding water efficiency. In addition, the proposed project's wastewater would be routed through the on-site water factory, and reused throughout the project site for irrigation purposes. This project design feature and water treatment approach ensures the efficient use of water. Therefore, the proposed project would further implementation of this reduction strategy.
Use graywater.	*Compatible:* The proposed project would use reclaimed water for landscape irrigation and toilet facilities in various nonresidential buildings. Accordingly, the proposed project would be compatible with this type of reduction strategy by minimizing the energy and water resources required to meet the demands of the proposed project's residents and occupants at build-out.
Restrict watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and control runoff.	*Compatible:* While the watering methods of the users and occupants of the project site are beyond the control of the applicant, the applicant is committed to curtailing urban runoff and maximizing groundwater recharge. In order to achieve this goal, the applicant would install native landscape areas and non-structural water quality treatment improvements. The project design would include minimizing impervious surfaces through clustering development and using bioretention, extended detention, and other vegetated treatment control Best Management Practices (BMPs) to disconnect impervious surfaces and reduce runoff volumes through evapotranspiration and infiltration. (Please see **Section 4.8.1**, **Water Quality**, of this Draft EIR for additional information.) Therefore, the proposed project would further implementation of this reduction strategy.

Measure	Compatibility of Project
Restrict the use of water for cleaning outdoor surfaces and vehicles.	*Compatible:* The project applicant has little to no control over the future occupants' use of water for cleaning outdoor surfaces and vehicles. Nonetheless, the site design for the proposed project also would include the provision of a car wash pad connected to sanitary sewer in the multi-family residential areas. Therefore, the proposed project would further implementation of this reduction strategy.
Implement low-impact development practices that maintain the existing hydrologic character of the site to manage stormwater and protect the environment.	*Compatible:* The primary goals of low impact/site design BMPs are to maintain a landscape functionally equivalent to predevelopment hydrologic conditions and to minimize the generation of pollutants of concern. Please see **Section 4.8.1**, **Water Quality**, of the Draft EIR, which discusses various low-impact project design features of the proposed project Village (e.g., clustered development; reserved open space; minimizing impervious areas through landscaping; buffer areas between the project site and the Santa Clara River; etc.). Therefore, the proposed project would further implementation of this reduction strategy.
Devise a comprehensive water conservation strategy appropriate for the project and location.	*Compatible:* The proposed project includes the construction of a water reclamation plant that would provide recycled water to the project site. Additionally, the proposed project would include native and/or drought tolerant landscaping on a majority of the project site. Finally, evapotranspiration (i.e., weather-sensitive sprinklers) controllers would be utilized for irrigation purposes throughout the project site. Therefore, the proposed project would further implementation of this reduction strategy.
Provide education about water conservation and available programs and incentives.	*Compatible:* The project applicant would include educational materials related to water conservation and available programs and incentives in the proposed project's CC&Rs. Accordingly, the proposed project would be compatible with this reduction strategy.
Solid Waste Measures	
Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).	*Compatible*: As discussed in **Section 4.9**, **Solid Waste Services**, of the Draft EIR, the project applicant would comply with all state- and locally mandated waste diversion and recycling requirements. Therefore, the proposed project would further implementation of this reduction strategy.
Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers located in public areas.	*Compatible:* The proposed project would meet the requirements of all applicable solid waste diversion, storage, and disposable regulations, which include the provision of recycling areas that are conveniently located, secured and protected against environmental conditions, clearly marked, and adequate in capacity, number and distribution. Therefore, the proposed project would further implementation of this reduction strategy.
Recover by-product methane to generate electricity.	*Not Applicable:* The proposed land uses would not generate methane that could be used for cogeneration purposes.

Measure	Compatibility of Project
Provide education and publicity about reducing waste and available recycling services.	*Compatible:* The first purchaser of each residential unit within the project site would be provided with educational or instructional materials addressing recyclable materials. In addition, the local waste management provider would distribute and/or have available online informational materials regarding reducing waste and its recycling services during the ordinary course of business. Therefore, the proposed project would further implementation of this reduction strategy.
Land Use Measures	
Include mixed-use, infill, and higher density in development projects to support the reduction of vehicle trips, promote alternatives to individual vehicle travel, and promote efficient delivery of goods and services.	*Compatible:* The project would include a broad range of housing types, nonresidential uses and a multi-modal transportation facility (Metrolink Station and Bus Transfer Station). Within the project site, future residents will be located within walking distances to commercial and mixed-use areas, schools, community parks, trails, and public transit. Therefore, the proposed project would further implementation of this reduction strategy.
Educate the public about the benefits of well-designed, higher density development.	*Compatible:* The proposed project furthers implementation of this reduction strategy by itself being a "well-designed, higher density development."
Incorporate public transit into project design.	*Compatible:* The proposed project includes construction of a Metrolink Station and Bus Transfer Station. Therefore, the proposed project would further implementation of this reduction strategy.
Preserve and create open space and parks. Preserve existing trees, and plan replacement trees at a set ratio.	*Compatible:* In building out a development of the proposed project, approximately 2,100 trees would be planted to vegetate the project site; in addition, other landscaping would be implemented throughout the project site. As discussed in detail in **Section 4.12**, **Parks and Recreation**, of the Draft EIR, the project site would include various public park amenities, including 12 acres of formal active/passive park uses, including the approximately 7-acre Oak Park and the 1-acre River Education Center, both of which are proposed for dedication to the City. Other recreational facilities include the Community Garden, Town Green, and up to six private recreational facilities. Therefore, the proposed project would further implementation of this reduction strategy.
Develop "brownfields" and other underused or defunct properties near existing public transportation and jobs.	*Not Applicable:* The project site is not considered a "brownfield."
Include pedestrian and bicycle-only streets and plazas within developments. Create travel routes that ensure that destinations may be reached conveniently by public transportation, bicycling or walking.	*Compatible:* All of the residential units that would be built on the project site would be located within walking distance of village or commercial centers, each of which encourage pedestrian and bicyclist access. Therefore, the proposed project would further implementation of this reduction strategy.

Measure	Compatibility of Project
Transportation and Motor Vehicles	
Limit idling time for commercial vehicles, including delivery and construction vehicles.	*Compatible:* Idling limits are in place by regulations subject to statewide application. The project applicant would require all contractors to comply with existing, applicable environment regulations, such as the anti-idling regulations. Therefore, the proposed project would neither hinder nor impede implementation of the anti-idling regulations.
Use low or zero-emission vehicles, including construction vehicles.	*Compatible:* The proposed project would include a Metrolink Station, Bus Transfer Station, and an extensive bicycle/pedestrian mobility system (trails, pathways, sidewalks, etc.). Electric vehicle charging stations would be provided in parking structures within the project site. Construction vehicles would comply with state and local requirements. Therefore, the proposed project would be consistent with this type of reduction strategy.
Promote ride-sharing programs (e.g., by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger load and unloading and waiting areas for ride sharing vehicles, and providing a web site or message board for coordinating rides).	*Compatible:* Carpool and vanpool programs would be incorporated into the project's transportation demand management plan. Loading spaces, as well as carpool and vanpool spaces, also would be provided in the commercial areas of the project. Therefore, the proposed project would further implementation of this reduction strategy.
Create car sharing programs. Accommodations for such programs include providing parking spaces for the car share vehicles at convenient locations accessible by public transportation.	*Compatible:* The Los Angeles County Metropolitan Transportation Authority's website contains information regarding car sharing. (See http://www.metro.net/riding_metro/commuteservices/commuter_carsharing.htm.) The project's Metrolink Station also may incorporate a car sharing program; further, Santa Clarita Transit would operate a Bus Transfer Station directly adjacent to the Metrolink Station. Therefore, the proposed project would further implementation of this reduction strategy.
Create local "light vehicle" networks, such as neighborhood electric vehicle (NEV) systems.	*Compatible:* Market forces will drive the installation and use of "light vehicle" networks, and the project applicant has little to no control over whether future project users and occupants choose to utilize such networks. Nonetheless, the design of the project site, which is structured to provide optimal walkability via the paseos and trails, serve to accomplish the same primary objective as this reduction strategy (i.e., reduction in reliance on single occupancy vehicles as the primary means of travel). Therefore, the proposed project would neither hinder nor impede implementation of this reduction strategy.
Provide the necessary facilities and infrastructure to encourage the use of low or zero-emission vehicles (e.g., electric vehicle charging facilities and conveniently located alternative fueling stations).	*Compatible*: The proposed project would incorporate electric vehicle charging stations into the project's parking structures. Additionally, as previously mentioned, the project site has been designed to be a walkable community, thereby reducing the need to operate or rely on motor vehicle transportation to reach many essential services (e.g., schools; food and gas; parks; etc.). Accordingly, the proposed project would further implementation of this reduction strategy.

Measure	Compatibility of Project
Increase the cost of driving and parking private vehicles by, e.g., imposing tolls and parking fees.	*Compatible:* Though not proposed, paid parking could be implemented in the future in the parking structures within the commercial areas of the proposed project. Additionally, the proposed project would be served by a Metrolink Station and Bus Transfer station, which would encourage transit use and reduce vehicle use. Therefore, the proposed project would be consistent with this type of reduction strategy.
Build or fund a transportation center where various public transportation modes intersect.	*Compatible:* The proposed project includes the construction of a Metrolink Station and Bus Transfer station, which would be partially funded by the project applicant. Therefore, the proposed project would further implementation of this reduction strategy.
Provide shuttle service to public transit.	*Compatible:* The City of Santa Clarita provides demand-responsive service using a fleet of 16 ADA-compliant paratransit vans and small buses; and curb-to-curb services are available to the elderly, disabled, and general public every day of the week. (See http://www.santa-clarita.com/cityhall/admin/Transit/AAC.asp.) Additionally, residential and commercial uses within the proposed project would be within walking distance of the Metrolink Station and Bus Transfer Station. Therefore, the proposed project would further implementation of this reduction strategy.
Provide public transit incentives such as free or low-cost monthly transit passes.	*Compatible:* The proposed project's transportation demand management program would require future businesses within the office areas of the project to provide transit incentives to employees. Therefore, the proposed project would further implementation of this reduction strategy.
Incorporate bicycle lanes and routes into street systems, new subdivision, and large developments.	*Compatible:* The proposed project would incorporate bike lanes and routes into the street system. Therefore, the proposed project would further implementation of this reduction strategy.
Incorporate bicycle-friendly intersections into street design.	*Compatible:* The circulation plan for the proposed project has incorporated bike trails and paths into the street design in order to ensure that these routes are user-friendly. Therefore, the proposed project would further implementation of this reduction strategy.
For commercial projects, provide adequate bicycle parking near building entrances to promote cyclist safety, security, and convenience. For large employers, provide facilities that encourage bicycle community, including, e.g., locked bicycle storage, or covered or indoor bicycle parking.	*Compatible:* Bicycle parking and storage would be provided throughout the proposed project. Therefore, the proposed project would further implementation of this reduction strategy.
Create bicycle lanes and walking paths directed to the location of schools, parks and other destination points.	*Compatible:* The project site would include an extensive network of paseos and trails that provide access to schools, commercial centers, community parks, etc. Therefore, the proposed project would further implementation of this reduction strategy.

Measure	Compatibility of Project
Work with the school district to restore or expand school bus services.	*Not Applicable:* As discussed in **Section 4.10**, **Education**, the proposed project would generate additional elementary students that would likely attend Sulphur Springs Elementary School. Sulphur Springs Elementary School is located at 16628 Los Canyon Road in Canyon Country, directly adjacent to the eastern boundary of the project site. Due to the close location of this elementary school to the project site, busing would not be necessary. The proposed project also would generate additional junior high students that would likely attend Sierra Vista Junior High, located at 19425 West Stillmore Street and approximately 2 miles west of the project site. Finally, the proposed project also would generate additional high school students that would likely attend Canyon High School, located at 19300 West Nadal Street and approximately 2 miles northwest of the project site. Junior high and high school students would have the ability to utilize Santa Clarita Transit (via the Bus Transfer Station) for direct access to Sierra Vista Junior High and Canyon High Schools. Therefore, the proposed project would further implementation of this reduction strategy.
Institute a telecommute program. Provide information, training, and incentives to encourage participation. Provide incentives for equipment purchases to allow high-quality teleconferences.	*Not Applicable:* This is beyond the scope of the proposed project, and beyond the control of the applicant.
Provide information on all options for individuals and businesses to reduce transportation-related emissions. Provide education and information about public transportation.	*Compatible:* Both the Los Angeles County Metropolitan Transportation Authority and City of Santa Clarita Transit provide extensive transportation services in the vicinity of the project site. Information on these services would be readily available, via the agencies' websites, to all future residents and occupants of the project site. Therefore, the proposed project would further implementation of this reduction strategy.

Source: Office of the California Attorney General, Global Warming Measures, updated February 14, 2008.

[1] The Santa Clarita Valley water suppliers have joined together to develop a plan to ensure the efficient use of water in Santa Clarita Valley. In that regard, the water suppliers are working towards adoption of the *Santa Clarita Valley Water Use Efficiency Strategic Plan* (September 2008), the goal of which is to achieve a long-term reduction in water demand of at least 10 percent over the next twenty years.

Table 4.22-7
Compatibility with Climate Action Team GHG Emission Reduction Strategies

GHG Emission Reduction Strategies	Compatibility of Project
California Air Resources Board (ARB)	
Vehicle Climate Change Standards: AB 1493 required CARB to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of greenhouse gas emissions from passenger vehicles and light-duty trucks. Regulations were adopted by CARB in September 2004.	*Compatible:* California recently received the required waiver under the Clean Air Act to enable implementation of the AB 1493 regulations. GHG emission reductions are expected to occur via action undertaken by automobile manufacturers and any enforcement programs implemented by CARB. The proposed project would neither hinder nor impede implementation of the AB 1493 regulations.
Diesel Anti-Idling: In July 2004, CARB adopted a measure to limit diesel-fueled commercial motor vehicle idling. Additionally, in July 2007, CARB adopted requirements applicable to off-road diesel equipment, including limits on idling times.	*Compatible:* The diesel anti-idling regulations are subject to statewide application. The project applicant would require all contractors to comply with existing, applicable environment regulations, such as the anti-idling regulations. Therefore, the proposed project would neither hinder nor impede implementation of the anti-idling regulations.
Hydrofluorocarbon Reduction: (1) Ban retail sale of HFCs 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) and Enforce the federal ban on HFCs.	*Not Applicable:* These reduction measures are beyond the scope of the proposed project and the control of the project applicant.
Transportation Refrigeration Units (TRUs): These measures would reduce emissions from TRUs, increase off-road electrification, and increase use of shore side/port electrification.	*Compatible:* The project applicant does not anticipate that any notable use of TRUs would occur in connection with the proposed project. Therefore, the proposed project would neither hinder nor impede implementation of measures designed to reduce emissions from TRUs.
Heavy-Duty Vehicle Emission Reduction Measures: Increased efficiency in the design of heavy-duty vehicles and an education program for the heavy-duty vehicle sector.	*Compatible:* These reduction measures would be enforced by CARB and subject to statewide application. The project applicant would require all contractors to comply with existing, applicable environment regulations, such as the heavy-duty vehicle emissions reduction measures. Therefore, the proposed project would neither hinder nor impede implementation of these reduction measures.

GHG Emission Reduction Strategies	Compatibility of Project
Achieve 50% Statewide Recycling Goal: This strategy requires achievement of California's 50 percent waste diversion mandate, as established by the Integrated Waste Management act of 1989. Meeting the waste diversion mandate would reduce emissions associated with energy-intensive material extraction and production, as well as methane emission from landfills.	*Compatible:* As discussed in **Section 4.9**, **Solid Waste Services**, the project applicant would comply with state- and locally mandated waste diversion and recycling requirements. Therefore, the proposed project would further implementation of this reduction strategy.
Department of Forestry	
Urban Forestry: Expand local urban forestry programs and achieve a statewide goal of planting 5 million trees in urban areas by 2020.	*Compatible:* In building out the proposed project approximately 2,100 trees would be planted to vegetate the project site; in addition, other landscaping would be implemented throughout the project site. In addition, as discussed in **Section 4.12**, **Parks and Recreation**, the proposed project incorporates 12 acres of formal active/passive park uses, including the approximately seven-acre Oak Park and the 1-acre River Education Center, both of which are proposed for dedication to the City. Other recreational facilities include the Community Garden, Town Green, and up to six private recreational facilities. The proposed project also includes over 4 miles of trails both on and off the project site, including significant extensions of the Santa Clara River Trail. The project's trail system would provide (i) access to the regional trail network and open areas; and (ii) connections between living areas, shopping, work, entertainment, schools, and civic and recreational facilities. Therefore, the proposed project would further implementation of this reduction strategy.
Department of Water Resources	
Water Use Efficiency: Approximately 19 percent of all electricity, 30 percent 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.	*Compatible:* In order to curtail urban runoff and maximize groundwater recharge, the proposed project would utilize open/soft bottom channels, increased native landscape areas, and non-structural water quality treatment improvements. In addition, the project site would be vegetated with native and drought-tolerant plants, use recycled water for irrigation, and evapotranspiration controllers to reduce potable water demand and runoff. Therefore, the proposed project would further implementation of this reduction strategy.

GHG Emission Reduction Strategies	Compatibility of Project
California Energy Commission (CEC)	
Building Energy Efficiency Standards in Place and in Progress: Public Resources Code section 25402 authorizes the CEC to adopt and periodically update its building energy efficiency standards that apply to newly constructed buildings and additions and alterations to existing buildings.	*Compatible:* As discussed throughout this section, all new residential and nonresidential development on the project site would be at least 20 percent more energy efficient than the 2008 standards adopted by the CEC in Title 24. Therefore, the proposed project would neither hinder nor impede implementation of this reduction strategy.
Appliance Energy Efficiency Standards in Place and in Progress: Public Resources Code section 25402 authorizes the CEC 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.	*Compatible:* Appliances installed throughout the project site would comply with the applicable energy efficiency standards, to the extent that the selection of appliances is within the control of the project applicant (and not the control of the future users and occupants of the project site). In addition, the project applicant will require Energy Star major appliances in all residential units and applicable commercial uses, where available. Therefore, the proposed project would neither hinder nor impede implementation of this reduction strategy.
Building, Transportation, and Housing Agency	
Smart Land Use and Intelligent Transportation Systems (ITS): Smart land use strategies encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors.	*Compatible:* The proposed project is a mixed-use, transit-oriented, planned community that employs sustainable development principles. Build-out of the proposed project would create jobs, provide housing, and include open space and park resources. Therefore, the proposed project would further implementation of this reduction strategy.
Measures to Improve Transportation Energy Efficiency: Builds on current efforts to provide a framework for expanded and new initiatives including incentives, tools, and information that advance cleaner transportation and reduce climate change emissions.	*Compatible:* The proposed project incorporates "transit friendly" project design features. For example, the project includes construction of a Metrolink Station and Bus Transfer Station. In addition, the applicant is committed to providing its fair share for roadway improvements in the Santa Clarita Valley. Therefore, the proposed project would further implementation of this reduction strategy.
State Consumer Services Agency	
Green Buildings Initiative: Green Building Executive Order, S-20-04 (CA 2004), sets a goal of reducing energy use in public and private buildings by 20 percent by the year 2015, compared with 2003 levels.	*Compatible:* The project applicant would comply with any local green building policies and ordinances, and any other state-mandated green building initiatives, as applicable and as required by law. In addition, the proposed project would be at least 20 percent more energy efficient than Title 24 currently requires and, where specified, may be supplemented by renewable energy resources. Therefore, the proposed project would further implementation of this reduction strategy.

Source: Summarized from Chapter 5 of the Climate Action Team Report to Governor Schwarzenegger and the Legislature (March 2006).

5. MITIGATION MEASURES PROPOSED BY THIS EIR

Based on the relative efficiencies of the project design features that have been incorporated as mitigation measures in the above discussion, and the corresponding GHG emission reductions associated with these features, no additional mitigation measures are recommended or required.

6. CUMULATIVE IMPACTS

Under CEQA, the analysis of cumulative impacts is necessarily guided by standards of practicality, feasibility, and reasonableness. (*State CEQA Guidelines*, Section 15151.) And, the question to be considered when undertaking the analysis is whether the project's incremental effects are "cumulatively considerable" (*State CEQA Guidelines*, Section 15130, subd. (a)), which means whether the project's incremental effects are significant when viewed in connection with the effects of past, present, and probably future projects. (*State CEQA Guidelines*, Section 15065, subd. (a)(3).) Here, the specific question is whether the proposed project's GHG emissions are cumulatively considerable in conjunction with GHG emissions generated by other projects, in that the emissions would impede compliance with the GHG emissions reduction goals mandated by AB 32.

First, as discussed in this section, above, emissions must be reduced at least 28.5 percent below the CARB 2020 NAT scenario for California to achieve the emission reduction mandates of AB 32. The proposed project's emissions would satisfy this reduction requirement and, therefore, project-level impacts would be less than significant. The proposed project would not result in any additional effect because the project's GHG emissions do not impede compliance with the GHG emissions reduction goals mandated by AB 32, as it is presently understood. As a result, the proposed project's GHG emissions are not considered "cumulatively considerable" under CEQA.

In addition to incorporating the design features and mitigation measures necessary to facilitate the achievement of AB 32's goals at a statewide level, the proposed project also would comply with any additional, applicable state-mandated requirements concerning GHGs and any local initiatives from the City of Santa Clarita. Compliance with all such measures would further ensure that the proposed project would not result in significant cumulatively considerable impacts on global climate changes.

7. CUMULATIVE MITIGATION MEASURES

Other than complying with the mitigation measures identified above, in connection with approval of the Vista Canyon Specific Plan, no further mitigation is recommended or required. Nonetheless, it should be noted that as AB 32's mandate is brought to fruition, through the adoption of regulations and additional legislation, additional GHG reduction measures would be implemented, and the proposed project, and

the residents and businesses that occupy the project site, would be subject to those reduction measures. Therefore, additional GHG emissions reductions are ensured and inevitable.

Section 15130, subdivision (c), of the *State CEQA Guidelines* acknowledges that "[w]ith some projects, the only feasible mitigation for cumulative impacts may involve the adoption of ordinances or regulations rather than the imposition of conditions on a project-by-project basis." Global climate change is this type of issue, as the very causes and effects of global climate change are not simply determined on a local or regional scale. Therefore, given the uncertainties in identifying, let alone quantifying, the impact of any single project on global warming and climate change, and the efforts made to design the proposed project with sustainable development principles in mind, any further mitigation is best accomplished through CARB and other agency regulations implementing the reduction mandate AB 32.

8. SIGNIFICANT UNAVOIDABLE IMPACTS

Based on the above analysis, there would be no significant unavoidable impacts relating to global climate change with implementation of the proposed project.