TABLE OF CONTENTS
SECTION 8.0 - GLOBAL CLIMATE CHANGE

Page

LIST OF SECTIONS

LIST OF FIGURES

LIST OF TABLES

LIST OF TABLES (continued)

LIST OF APPENDICES

8.1 INTRODUCTION

This section evaluates the potential direct, indirect, and secondary global climate change impacts resulting from the proposed Project and its alternatives. Direct impacts would result from the generation of greenhouse gas emissions (GHGs) associated with implementation of the RMDP and SCP components of the proposed Project. Indirect impacts would result from GHGs emitted during the build-out and subsequent use and operation of various land uses in the Specific Plan area, the VCC planning area, and a portion of the Entrada planning area. Finally, secondary impacts would result from GHGs emitted off of the Project site.

In order to evaluate the proposed Project's impacts, this section presents the results of a quantitative emissions inventory and considers whether the proposed Project impedes the achievement of reduction mandates provided in California's primary GHG emissions legislation. The emissions inventory and other technical analysis used in preparing this section are from the "Climate Change Technical Report: Resource Management and Development Plan and Spineflower Conservation Plan" prepared by ENVIRON International Corporation (ENVIRON), dated February 2009. A copy of this technical report is found in **Appendix 8.0** of this EIS/EIR. As demonstrated throughout this section, the proposed Project and its alternatives would result in a less-than-significant impact to global climate change as the project design features ensure that California's reduction mandates are not impeded.

8.1.1 Relationship of Proposed Project to Newhall Ranch Specific Plan Program EIR

This section (**Section 8.0**) provides a stand-alone assessment of the potentially significant global climate change impacts associated with the proposed Project; however, the previously certified Newhall Ranch environmental documentation provides important information and analysis for the RMDP and SCP components of the proposed Project. The RMDP and SCP would require federal and state permitting, consultation and agreements; these permits and agreements are needed to facilitate development of the previously approved land uses within the Specific Plan area. Further, if approved, the proposed Project would establish comprehensive spineflower preserves within the Project area, thereby facilitating development within the Specific Plan area, the VCC planning area, and a portion of the Entrada planning area.

The Newhall Ranch Specific Plan Program EIR did not identify and analyze global climate change–related impacts. However, in response to identified impacts in other environmental impact/resource categories (*i.e.*, flood/hydrology; biota; traffic/access; air quality; water resources; wastewater disposal; fire services and hazards; education; parks, recreation and trails; electricity/utilities), Los Angeles County adopted numerous mitigation measures[1] and one condition of approval that reduce the amount of GHG emissions generated by build-out of the Specific Plan, enable the Specific Plan land uses to better respond to global climate change, and promote sustainable development. As these measures were adopted and will be implemented, pursuant to the Specific Plan's Mitigation Monitoring and Reporting Program, they can

[1] Reference to mitigation measures included in the Newhall Ranch Specific Plan Program EIR is preceded by "SP" in this EIS/EIR to distinguish them from other mitigation measures discussed herein.

be relied upon in this analysis as feasible measures that reduce GHG emissions and global climate change impacts.

Table 8.0-1 identifies and summarizes the applicable mitigation measures and the condition of approval adopted in connection with approval of the Specific Plan.

Table 8.0-1
Specific Plan Mitigation Measures That Reduce Greenhouse Gas Emissions

Impact Description	Mitigation Measures
Flood/Hydrology	• SP-4.2-5 (prepare and obtain approval of a Final Hydrology Plan, Final Drainage Plan, and Final Grading Plan); • SP-4.2-6 (install permanent erosion control measures in order to prevent sediment and debris from entering storm drainage improvements); • SP-4.2-7 (satisfaction of all applicable requirements of the NPDES Program in effect in Los Angeles County); and • SP-4.2-8 (compliance with all appropriate requirements of the Los Angeles County Standard Urban Stormwater Mitigation Plan and the State Water Resources Control Board's Order 99-08-DWQ).
Biological Resources	• SP-4.6-1 (restoration mitigation areas shall be located within the River Corridor SMA); • SP-4.6-5 (restoration shall use native plant species); • SP-4.6-6 (final revegetation plans shall outline the methods for the installation of plant materials); • SP-4.6-7 (revegetation plans shall include guidelines for maintenance of the mitigation site); • SP-4.6-11 (habitat enhancement shall rehabilitate moderately disturbed native habitat areas); • SP-4.6-13 (revegetation plan shall be prepared prior to implementation of enhancement mitigation); • SP-4.6-15 (removal of non-native species subject to standards); • SP-4.6-17 (access to the River Corridor SMA for hiking and biking is limited to the River trail system); • SP-4.6-18 (where development lies adjacent to the River Corridor SMA, a transition area shall be designed); • SP-4.6-19 (development of transition areas subject to various standards); • SP-4.6-22 (a permanent, non-revocable conservation and public access easement shall be offered to the County of Los Angeles over the portion of the River Corridor SMA); • SP-4.6-23 (easement shall be offered prior to the transfer of River Corridor SMA ownership to the management entity); • SP-4.6-24 (easement shall prohibit grazing and agriculture, and restrict recreation use to the established trail system); SP-4.6-25 (easement shall be consistent with other applicable conservation easements);

Table 8.0-1
Specific Plan Mitigation Measures That Reduce Greenhouse Gas Emissions

Impact Description	Mitigation Measures
	• SP-4.6-26 (land owner shall provide a plan to the County for permanent ownership and management of the River Corridor SMA, including any necessary financing); • SP-4.6-26a (two types of habitat restoration may occur in the High Country SMA); • SP-4.6-37 (High Country SMA shall be offered for dedication in three phases); • SP-4.6-38 (easement shall be offered to the County and Center for Natural Lands Management over the High Country SMA); • SP-4.6-41 (High Country SMA shall be offered for dedication in fee to a joint powers authority); • SP-4.6-42 (residential collection fee to fund conservation efforts for the High Country SMA); • SP-4.6-43 (Open Areas may be used for mitigation of riparian, oak resources, or elderberry scrub); • SP-4.6-48 (standards for restoration/enhancement of oak resources); • SP-4.6-49 (prepare wildfire fuel modification plan); • SP-4.6-50 (requires fuel modification zone); and • SP-4.6-51 (requires fire retardant plant species).
Traffic/Access	• SP-4.8-1 (applicant responsible for on-site improvements); • SP-4.8-5 (requires consultation regarding bus pull-ins); • SP-4.8-11 (applicant must participate in I-5 fee program, if adopted); and • SP-4.8-12 (applicant must participate in transit fee program, if adopted).
Air Quality	• SP-4.10-1 (place commercial and service uses in close proximity to residential subdivisions); • SP-4.10-2 (locate residential uses in close proximity to commercial uses, mixed-uses, and business parks); • SP-4.10-3 (construct bus pull-ins throughout the site); • SP-4.10-4 (provide pedestrian facilities throughout the site); • SP-4.10-5 (provide roads with adjacent trials for pedestrian and bicycle use throughout the site); • SP-4.10-6 (implement SCAQMD rules and regulations applicable to subdivision development relating to issues such as grading, paved roads, and unpaved roads); • SP-4.10-9 (implement SCAQMD's CEQA Air Quality Handbook operational emission reduction measures, as applicable and if feasible); • SP-4.10-11 (compliance with Title 24); • SP-4.10-12 (energy efficient lighting); and • SP-4.10-14 (education program to inform residential buyers).

Table 8.0-1
Specific Plan Mitigation Measures That Reduce Greenhouse Gas Emissions

Impact Description	Mitigation Measures
Water Resources	• SP-4.11-1 (implement a water reclamation system and distribution system for non-potable reclaimed water); • SP-4.11-2 (landscape concept plans shall include drought-tolerant and native species); • SP-4.11-3 (major manufactured slopes should be landscaped to require minimal irrigation); • SP-4.11-4 (water conservation measures shall be incorporated into all irrigation systems); and • SP-4.11-16 (compliance with Title 22 for agricultural groundwater).
Wastewater Disposal	• SP-4.12-1 (reservation of site sufficient to accommodate a water reclamation plant); and • SP-4.12-2 (requires a 5.8 to 6.9 million gallons per day water reclamation plant).
Fire Services and Hazards	• SP-4.18-1 (requires preparation of a Wildfire Fuel Modification Plan); and • SP-4.18-4 (requires funding for three fire stations and dedication of two fire station sites).
Education	• SP-4.16-1 (reservation of space for five elementary schools, one junior high school, and one high school).
Parks, Recreation, and Trails	• SP-4.20-1 (requires 10 public parks, open areas/community parks, the High Country SMA, the River Corridor SMA, a 15-acre lake, an 18-hole golf course, and a trail system); and • SP-4.20-2 (requires project applicant to finalize trail alignments with the County).
Electricity and Utilities	• SP-4.14-1 (compliance with Title 24).
Additional Conditions of Approval	• Condition (g): Upon approval of the first tract map adjacent to Ventura County in the Oak Valley Village of the Newhall Ranch Specific Plan, the applicant shall grant to the public in perpetuity the approximately 1,517 acres of land encompassing the Salt Creek watershed in Ventura County.

Source: Newhall Ranch Revised Additional Analysis (May 2003); and Additional CEQA Findings and Statement of Overriding Considerations Regarding the Newhall Ranch Final Additional Analysis to the Partially Certified Final EIR for the Newhall Ranch Specific Plan and Water Reclamation Plant (May 2003).

8.1.2 Relationship of Proposed Project to VCC and Entrada Planning Areas

8.1.2.1 VCC Planning Area

The SCP component of the proposed Project, if approved, would facilitate development in the VCC planning area. The VCC planning area is reliant on the SCP and associated take authorizations, and would not be developed without the take authorizations due to grading constraints. The VCC planning area is the remaining undeveloped portion of the VCC commercial/ industrial complex currently under development by the applicant. The VCC was the subject of an EIR certified by Los Angeles County in April 1990

(SCH No. 1987-123005). The applicant recently has submitted to Los Angeles County the last tentative parcel map (TPM No. 18108) needed to complete build-out of the remaining undeveloped portion of the VCC planning area. The County will require preparation of an EIR in conjunction with the parcel map and related project approvals; however, the County has not yet issued a Notice of Preparation (NOP) of the EIR or released the EIR.

The previously certified VCC EIR (April 1990) did not analyze the global climate change impacts resulting from approval of the VCC project. However, as with the Specific Plan Program EIR, Los Angeles County adopted mitigation measures (in response to impacts identified in various environmental impact categories) that reduce the amount of GHG emissions resulting from development of the VCC, enable the VCC land uses to better respond to global climate change, and promote sustainable development. These measures were adopted and will be implemented, pursuant to the VCC EIR (April 1990); therefore, they can be relied upon in this analysis as feasible measures that reduce GHG emissions and global climate change impacts.

Table 8.0-2 identifies and summarizes the applicable mitigation measures adopted in connection with certification of the VCC EIR (April 1990).

Table 8.0-2
VCC Project Mitigation Measures That Reduce Greenhouse Gas Emissions

Impact Description	Mitigation Measure
Flood Hazards	• Mitigation Measures require pre-project runoff conditions to be restored at the downstream project boundary; compliance with all section 404 permit requirements; and the installation of lining at Hasley Creek and energy dissipators.
Biological Resources	• Mitigation Measures require replacement and maintenance of oak resources; retention of 375 acres of native coastal sage scrub vegetation; revegetation with fire-resistant, drought-tolerant species; implementation of all section 404 permit requirements that protect wildlife habitat; avoidance of encroachment on riparian habitat along the Castaic Creek channel; installation of soft-bottom channels to allow for retention of existing riparian vegetation; implementation of a vegetation restoration plan; channelization must avoid preserved riparian habitat; and removal of contaminants before runoff is diverted to Hasley or Castaic Creek.
Air Quality	• Mitigation Measures require maintenance of equipment engines to minimize exhaust emissions; reduction of imbalance between housing and jobs in the Santa Clarita Valley, thereby reducing trip lengths and mobile emissions; install roadway improvements to provide for smooth traffic flow; provide bus stops, sidewalks, and trails to facilitate transit use; provide commercial uses to minimize travel distances for employees and local residents; and implementation of Regulation 15 of the SCAQMD (*e.g.*, financial incentives for ridesharing; subsidization of carpooling; telecommuting; *etc*.).
Water	• Mitigation Measures require connection fee for all new development; withholding of building permits unless there is adequate water supply; inclusion of drought tolerant vegetation, water sensors, and specialized irrigation systems for landscaping; and utilization of the Department of Water Resources' interior and exterior water conservation and water reclamation recommendations.

Table 8.0-2
VCC Project Mitigation Measures That Reduce Greenhouse Gas Emissions

Traffic	• Mitigation Measures require participation in roadway improvement efforts.
Fire Service	• Mitigation Measures require development of the site to reduce the risk of brush fires.
Solid Waste	• Mitigation Measures require compliance with all solid waste reduction ordinances and recycling programs.

Source: VCC EIR (April 1990).

8.1.2.2 Entrada Planning Area

The applicant is seeking approval from Los Angeles County for planned residential and nonresidential development within the Entrada planning area. The SCP component of the proposed Project would designate an area within the Entrada planning area as a spineflower preserve. If approved, the SCP component would include take authorization of spineflower populations in Entrada that are located outside of the designated spineflower preserve. Thus, the planned residential and nonresidential development within portions of the Entrada planning area is reliant on the SCP and associated take authorizations, and those portions would not be developed without the take authorization. The applicant has submitted, to Los Angeles County, Entrada development applications, which cover the portion of the Entrada planning area facilitated by the SCP component of the proposed Project. However, as of this writing, the County has not yet issued a NOP of an EIR for Entrada. As a result, there is no underlying local environmental documentation for the Entrada planning area at this time.

8.2 METHODOLOGY

To estimate GHG emissions from the proposed Project and its alternatives, five different types of resources were relied upon: (1) emissions estimation guidance from government-sponsored organizations; (2) government-commissioned studies of energy use patterns; (3) energy surveys by other consulting firms; (4) emissions estimation software; and (5) building energy modeling software (see **Appendix 8.0** [ENVIRON Technical Report]). These sources are described below.

8.2.1 Emissions Estimation Guidance

The GHG emissions inventory for the proposed Project was developed using guidance from two government-sponsored organizations. The first is the California Climate Action Registry (CCAR), which was established by the California Legislature to assist willing parties in estimating and recording their GHG emissions for use as a baseline in meeting future emissions reduction requirements. Publications by the CCAR include not only recommendations on how to compile a GHG emissions inventory, but also relevant data on energy use and emissions.

The second organization is the Intergovernmental Panel on Climate Change (IPCC). The IPCC's main role is to assess information on climate change, which is then synthesized in IPCC reports, including methodology reports. These reports also include relevant emission factors and specific scientific data that can be used to estimate GHG activities from various activities.

8.2.2 Studies and Surveys of Energy Use Patterns

For estimating emissions based on energy use, ENVIRON consulted literature on patterns of energy use. Studies commissioned by the U.S. Energy Information Administration (EIA) and the California Energy Commission (CEC) provide data on energy use patterns associated with municipal activities, natural resource distribution, and other activities that might take place in the kind of development enabled by approval of the proposed Project. The EIA and CEC data were then used to estimate project-related energy use patterns, which, in turn, were applied to the specific characteristics of the build-out areas to estimate GHG emissions. In addition, studies performed by individual municipalities or scientific organizations were used, as noted in **Appendix 8.0**.

8.2.3 Emissions Estimation Software and Building Energy Modeling Software

To facilitate the calculation of emissions from construction, motor vehicles, and urban developments, the California Air Resources Board (CARB) and South Coast Air Quality Management District (SCAQMD) have developed several software programs that streamline emissions estimation from these sources. The inventory presented in this section was developed using five models to estimate GHG emissions from the proposed Project and its alternatives:

8.2.3.1 OFFROAD

OFFROAD2007 is the most recent version of a model developed by the CARB to estimate the activity and emissions of off-road mobile emissions sources, such as construction equipment. OFFROAD contains a database of default values for horsepower, load factor, and hours per day of operation, and can calculate emission factors based on the type of equipment and year of use.

8.2.3.2 EMFAC

EMFAC2007, also developed by CARB, compiles real fleet data on the county-level for the state of California, including vehicle model year distributions, vehicle class (*e.g.*, light-duty auto; medium-duty truck; heavy-duty truck) distributions, and emission rate information, in order to generate fleet-average emission factors for most criteria pollutants and carbon dioxide (CO_2). EMFAC2007 is the newest version of the program. Emission factors from EMFAC2007 depend on the vehicle class, vehicle technology, speed, year of operation, average ambient air temperature, and relative humidity.

8.2.3.3 URBEMIS

The URBEMIS (Version 9.2.2) software was created by SCAQMD, and it estimates emissions associated with different aspects of urban development. The operational data module in URBEMIS calculates emissions from mobile sources operating during the use of a development based on emission factors from EMFAC2007 and traffic use information specific to a development. URBEMIS provides county, air district/air basin, and statewide averages for the number of daily trips per housing unit and per student at an elementary school, in the absence of more specific information from traffic engineers. URBEMIS also provides air district-specific default values for vehicle fleet characteristics (vehicle class distribution and

technology categories) and travel conditions (average trip length, trip speed, and relative frequency of each type of trip).

In addition to mobile source emissions, URBEMIS calculates emissions associated with construction-related activities. The URBEMIS construction module enables separate emissions calculations for each of the three typical stages of any construction project: demolition; site grading; and, building construction. Based on the timing of construction and size of the development, URBEMIS defaults can be used to estimate emissions. Alternatively, the user can override these defaults by entering specific information about the construction project, such as what types and numbers of equipment are going to be used.

URBEMIS also estimates GHG emissions from three types of GHG-emitting area sources based either on program defaults or more specific project information inputted by the user. These uses are natural gas fuel combustion, hearth fuel combustion, and landscaping equipment.

8.2.3.4 eQUEST

The CEC approved eQUEST as an energy modeling software for the 2005 Title 24 nonresidential Alternative Compliance Method (ACM). Title 24 compliant buildings can be created using eQuest. Default parameters specific to each building type are used for many parameters, including building area, number of floors, and cooling/heating equipment type.

8.2.3.5 Micropas

Micropas 7.3 is a building energy efficiency modeling package approved by the CEC as a 2005 Title 24 residential ACM. The Micropas software calculates the energy use per square foot per year and the Time Dependent Valuation of the energy use per square foot per year to determine Title 24 compliance.

8.3 REGULATORY SETTING

At the federal, state, and local levels, legislation and regulations have been enacted to better track and reduce GHGs. At the federal level, some incentives for businesses and individuals to take voluntary steps to limit GHG emissions have been established. Many regions, states, and municipalities have taken independent action as well, electing to impose more strict mandates on GHG emissions. The following is a summary of the relevant federal and state GHG emissions legal framework, the regulatory efforts and policies of the local jurisdiction (*i.e.*, Los Angeles County), and other guidance.

8.3.1 Federal Authorities and Administering Agencies

At the federal level, GHG emissions have been addressed in the executive, legislative, and judicial branches. However, to date, mandatory GHG reduction measures have not been adopted.

With respect to the Executive Branch, in 2002, former President George W. Bush established a national policy goal to reduce the GHG emission intensity (tonnes of GHG emissions per million dollars of gross domestic product) of the United States economy by 18 percent by 2012. However, binding caps and/or reductions did not accompany this goal; rather, the U.S. Environmental Protection Agency (USEPA) administers a variety of voluntary programs and partnerships with GHG emitters. Such programs include

the "Climate Leaders" program, in which companies create long-term GHG emission record-keeping and reduction strategies, and the high global warming potential gas voluntary programs, in which the USEPA partners with industries producing and utilizing synthetic gases to reduce emissions of particularly potent GHGs.[2]

In July 2008, former President Bush, and other members of the Group of 8 (*i.e.*, Japan, Germany, Britain, France, Italy, Canada, Russia), also pledged to move towards a low-carbon society by cutting GHG emissions in half by 2050. The pledge does not clarify what year the 2050 cuts will be measured from, and does not set a goal for cutting emissions over the next decade.

During his presidential election campaign, President Barack Obama indicated he would support a national cap-and-trade program.[3] However, at this early phase in his presidency, it is uncertain what the new administration's final policies and programs will be as they relate to global climate change.

As provided above, while the Executive Branch has not implemented any programs requiring GHG emissions reductions to date, several bills have been introduced in the U.S. Congress that would establish mandatory GHG reporting and/or emissions reductions. In general, the bills share many features—most establish or enable a market-based system of tradable emissions allowances as at least one means of implementing overall GHG reductions.

The adopted Consolidated Appropriations Act, 2008 (H.R.2764) contains rules that require the USEPA to establish mandatory GHG emission reporting requirements. Sponsored by Senators Feinstein and Boxer, H.R.2764 directs the USEPA to publish draft reporting requirements by September 2008, with final rules in place by June 2009. These rules would mandate reporting "for all sectors of the economy" and direct the USEPA to include in its rule reporting of emissions resulting from upstream production and downstream sources. The new requirements also would allow for exclusions from the reporting requirements for emissions below "appropriate thresholds," as determined by the USEPA. In March 2009, the USEPA issued a draft version of the mandatory reporting regulation mandated by H.R.2764.

---

[2] See *U.S. Climate Policy And Actions*, USEPA, available online at http://www.epa.gov/climatechange/policy/index.html (last visited February 4, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

[3] Market-based, or cap-and-trade, systems work by establishing a cap on the total amount of GHG emissions that are allowed in a compliance period, and then either distribute emissions allowances to emitting facilities, allow emitting facilities to buy allowances from an auction system, or some combination of the two. Typically, only large emitters participate in cap-and-trade systems. All emitting facilities in the system must submit an allowance for each unit of carbon dioxide equivalent (CO_2e) they produce. If a facility is emitting more CO_2e than they have covered by allowances, they must choose between spending money to invest in CO_2e-mitigating technologies to reduce their emissions or purchasing additional allowances from facilities that are emitting less CO_2e for which they have allowances. The goal of these systems is to achieve a specified overall reduction in emissions in the most cost-effective way possible.

The emission sources that would be covered include energy intensive sources, such as cement production, iron and steel production, fossil fuel suppliers, and manufactures of motor vehicles and engines.

The recent U.S. Supreme Court decision also affects federal action on climate change (*Massachusetts v. Environmental Protection Agency* (2007) 549 U.S. 497). In that case, the Court ruled that the USEPA is authorized under the Clean Air Act (CAA) to regulate CO_2e emissions from new motor vehicles. While the Court did not mandate that the USEPA enact regulations to reduce GHG emissions, it found that the USEPA could only avoid taking 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. The Court rejected the USEPA's arguments that: (1) voluntary programs already in place were sufficient to address global warming; and (2) the USEPA should not take action on climate change because it may conflict with the initiatives or negotiations of the Executive Branch.

On May 14, 2007, in response to this ruling, the former Bush Administration issued an executive order directing the USEPA and Departments of Transportation and Energy to work together to establish regulations by 2008 that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines. However, the order did not specify what level of reductions these regulations need to achieve or how the agencies should achieve them. The order does state that any regulation needs to take into account sound scientific knowledge, cost-benefit analysis, public safety, and economic growth.

In response to the recent U.S. Supreme Court decision, the USEPA issued an Advanced Notice of Proposed Rulemaking (ANPRM) in July 2008, subject to a 120-day comment period, to seek further comment on the regulation of GHG emissions pursuant to the Clean Air Act. With the recent administration change, it is expected that the USEPA will adopt a new approach to climate change, particularly as President Obama has expressed his support for a nationalized cap-and-trade program; however, it is uncertain how exactly the agency will address GHG emissions.

In sum, to date, there has been no federal action requiring GHG emission reductions, and the likelihood of future regulations is not clear. Therefore, as discussed further below, some individual regions, states, and localities have fashioned individual regulatory schemes that address global climate change and the emission of greenhouse gases.

8.3.2 Regional Authorities and Administering Agencies

In the absence of federal action to control GHG emissions, several regional agreements have been established among various states. The agreements often develop GHG inventory and reporting standards, and set their own limits on acceptable emission levels.

One such agreement is the Western Regional Climate Action Initiative (the Initiative), entered into by Washington, Oregon, California, Arizona, Utah and New Mexico, as well as the Canadian provinces British Columbia and Manitoba. On August 22, 2007, the Initiative issued its "Statement of Regional Goal," which strives to secure "an aggregate reduction [of GHG emissions] of 15 percent below 2005

levels by 2020."[4] The regional goal is consistent with Short Term (2010-12), Medium Term (2020) and Long Term (2040-2050) goals for each member state and province. The Initiative is developing a regional, market-based cap-and-trade program, and California is expected to participate in that program.

A separate (but complimentary) regional effort is known as The Climate Registry, a collaboration among states, provinces, and tribes to develop and manage a common GHG reporting system. More than 30 states, three tribes, two Canadian provinces, and one Mexican state are participating. The Climate Registry began accepting quantitative emissions data in January 2008.[5]

8.3.3 State Authorities and Administering Agencies

The California legislature also has adopted several climate change-related bills in the past seven years. These bills aim to control and reduce the emission of GHGs in order to slow the effects of global climate change. In addition, Governor Schwarzenegger has issued several executive orders directed at global climate change-related matters.

8.3.3.1 Executive Orders

On June 1, 2005, Governor Schwarzenegger signed Executive Order No. S-3-05, which set the following GHG emission reduction targets for California: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and, by 2050, reduce GHG emissions to 80 percent below 1990 levels. Executive Order No. S-3-05 also instructed the Secretary of the California Environmental Protection Agency to coordinate with other state agencies and report to the Governor and State Legislature by January 2006 (and biannually thereafter) on progress made toward meeting the specified GHG emission reduction targets and the impacts of global climate change on California.

On November 14, 2008, Governor Schwarzenegger issued Executive Order No. S-13-08, which instructs various state agencies to come up with plans on how to address the expected effects of climate change in California, particularly sea level rise. The Executive Order specifically requires the California Resources Agency, in cooperation with other agencies, to request that the National Academy of Sciences (NAS) convene an independent panel to complete (by December 1, 2010) the first California Sea Level Rise Assessment Report and initiate, within 60 days after the signing of this Order, an independent sea level rise science and policy committee made up of state, national, and international experts. In addition, by June 30, 2009, the California Resources Agency is required to develop a state Climate Adaptation

[4] See *Western Climate Initiative Statement of Regional Goal*, Western Climate Initiative, available online at http://www.westernclimateinitiative.org/ewebeditpro/items/O104F13006.pdf (last visited February 9, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

[5] See *The Climate Registry* website, available online at http://www.theclimateregistry.org (last visited February 9, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

Strategy. The strategy must summarize the best known science on climate change impacts to California, assess California's vulnerability to the identified impacts, and outline solutions that can be implemented within and across state agencies to promote resiliency.

On November 17, 2008, Governor Schwarzenegger issued Executive Order No. S-14-08, which establishes a 2020 Renewable Portfolio Standard target for California's retail sellers of electricity. The Executive Order also endeavors to streamline the environmental review and permitting processes for renewable energy projects by directing all state regulatory agencies to give priority to such projects.

8.3.3.2 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.[6] 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 USEPA 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 USEPA, provided a waiver from the USEPA 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.

In December 2004, these regulations were challenged in federal court by the Alliance of Automobile Manufacturers, who claimed that the regulations attempted to regulate vehicle fuel economy, a matter that lies within the exclusive jurisdiction of the federal government. In a decision rendered in December 2007, the U.S. District Court for the Eastern District of California rejected key elements of the automakers' challenge and concluded that CARB's regulations were neither precluded nor preempted by federal statutes and policy (*Central Valley Chrysler-Jeep, Inc. v. Goldstone*, 529 F.Supp. 2d 1751 (E.D. Cal. 2007).

While this litigation was pending, in December 2005, CARB submitted a waiver application to the USEPA. After waiting nearly two years for a decision from the USEPA, in November 2007, California

[6] 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.

filed a lawsuit alleging that the USEPA failed to consider the waiver application in a timely fashion. The USEPA's chief promised to issue a decision on the application by December 31, 2007, and, in mid-December 2007, the USEPA's chief fulfilled his promise by issuing a decision denying California's waiver application. The denial was based on the USEPA's determination that the new federal automobile fuel economy requirements would achieve what California sought to accomplish *via* the AB 1493 regulations.

The denial of California's waiver application precluded as many as 16 other states from implementing tailpipe emission regulations similar to those adopted by California under AB 1493. In response to this denial, California filed a lawsuit, with the support of 15 other states, challenging the USEPA's decision.

On January 26, 2009, President Obama issued a presidential memorandum directing the Administrator of the USEPA to reconsider California's waiver application. Accordingly, the USEPA scheduled a public hearing for March 5, 2009, and accepted public comments on the waiver application through April 6, 2009. Should the USEPA reverse its decision on California's waiver application, the state would be authorized to implement the AB 1493 regulations and secure the desired tailpipe GHG emission reductions.

8.3.3.3 Assembly Bill 32

In August 2006, California Legislature adopted the California Global Warming Solutions Act of 2006. Also known as Assembly Bill 32 (AB 32), the new law designates CARB as the state agency responsible for monitoring and regulating sources of GHG emissions and for devising rules and regulations that will achieve the maximum technologically feasible and cost-effective GHG emissions reductions. Specifically, AB 32 seeks to achieve a reduction in statewide GHG emissions to 1990 levels by 2020. While AB 32 sets out a timeline for the adoption of measures to evaluate and reduce GHG emissions across all source categories, it does not articulate these measures itself; instead, these measures are being determined in subsequent regulatory processes.

Under AB 32, by January 1, 2008, CARB was required to determine the amount of statewide GHG emissions in 1990, and set the 2020 limit equivalent to that level. In that regard, CARB determined that the 1990 GHG emissions level (and the 2020 statewide cap) was 427 million tonnes of CO_2e. CARB further determined that the state must reduce its emissions inventory by 174 million tonnes of CO_2e to achieve the AB 32 reduction mandate (*i.e.*, 1990 levels by 2020). These GHG emission reductions are required to stabilize atmospheric carbon dioxide levels and, thereby, avoid dangerous climate change.[7]

[7] The atmospheric concentration of carbon dioxide is now 379 parts per million (ppm). According to some scientists, exceeding 450 ppm is a critical tipping point for global climate change. (See *Research Finds That Earth's Climate Is Approaching 'Dangerous' Point*, National Aeronautics and Space Administration, available online at http://www.nasa.gov/centers/goddard/news/topstory/2007/danger_point.html. (last visited February 9, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

CARB staff estimates that the early action measures required by AB 32 will provide approximately 42 million tonnes of CO_2e reductions. It is further anticipated that an additional 30 million tonnes of CO_2e reductions will be secured through the passage of anti-idling measures and implementation of AB 1493. The remaining 102 million tonnes of CO_2e needed to reduce California's GHG emissions to 1990 levels will be achieved through implementation of CARB's Scoping Plan, discussed below, and other regulatory efforts.

On December 6, 2007, CARB adopted regulations, pursuant to AB 32, requiring the largest facilities in California to report their annual GHG emissions. The facilities identified in the mandatory reporting regulations account for 94 percent of California's emissions from industrial and commercial stationary sources, and the regulations cover approximately 800 separate sources (*e.g.*, electricity generating facilities and retail providers; oil refineries; hydrogen plants; cement plants; cogeneration facilities; and industrial sources that emit more than 25,000 tonnes of CO_2e per year from an on-site stationary source).

CARB also has adopted its first set of GHG emission reduction measures, known as the "discrete early action measures." These measures either are currently underway or are to be initiated by CARB in the 2007-2012 timeframe. The discrete early action measures cover a number of sectors, including transportation, fuels, and agriculture, and address issues such as a low carbon fuel standard, landfill methane capture, and consumer products with high global warming potentials.

As mandated by AB 32, in December 2008, CARB adopted the *Climate Change Proposed Scoping Plan: A Framework For Change* (October 2008).[8] The Scoping Plan contains a comprehensive set of actions designed to reduce overall carbon emissions in California, improve the environment, reduce the state's dependence on oil, diversify energy sources, save energy, and enhance public health while creating new jobs and enhancing growth in California's economy. Key elements of the Scoping Plan include: (1) expansion and strengthening of existing energy efficiency programs, and building and appliance standards; (2) expansion of the renewable portfolio standard to 33 percent; (3) development of a regional cap-and-trade program (*i.e.*, participation in the Western Climate Initiative); (4) implementation of existing state laws and policies, including California's clean car standards, good movement measures, and the low carbon fuel standard; and (5) targeted fees to fund the long-term implementation of AB 32. The GHG emission reduction measures identified in the Scoping Plan adopted by the Board will be developed over the next three years and enforceable by 2012. By January 1, 2014 and every five years thereafter, CARB is required to update the Scoping Plan.

8.3.3.4 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

[8] *Climate Change Proposed Scoping Plan: A Framework for Change*, California Air Resources Board, available online at http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm (last visited February 9, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

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 confirms that no CEQA guidelines presently exist 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 requires that the Office of Planning and Research (OPR), by July 1, 2009, develop and transmit to the California Resources Agency guidelines for the mitigation of GHG emissions and their effects. The California Resources Agency is required to adopt the regulations 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.
>
> This bill advances a coordinated policy for reducing greenhouse gas emissions by directing the Office of Planning and Research and the Resources Agency to develop CEQA guidelines on how state and local agencies should analyze, and when necessary, mitigate greenhouse gas emissions.

On June 19, 2008, in light of its SB 97-mandated obligations, OPR issued a *Technical Advisory*, which provides lead agencies and project applicants with informal advice on how to conduct GHG emissions analysis in CEQA documents. OPR intends the *Technical Advisory* to be used on an interim basis only (*i.e.*, until OPR and the California Resources Agency accomplish their SB 97 mandates).[9] The *Technical Advisory*'s recommended approach notes that compliance with CEQA, for purposes of GHG emissions, entails three basic steps: (1) identification and quantification of GHG emissions; (2) assessment of the project's impact on climate change; and (3) identification and consideration of project alternatives and/or mitigation measures, if the project is determined to result in an individually or cumulatively significant impact.

---

[9] See *Technical Advisory -- CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review*, Governor's Office of Planning and Research, available online at http://opr.ca.gov/ceqa/pdfs/june08-ceqa.pdf (last visited February 9, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

On April 13, 2009, OPR transmitted its proposed amendments to the CEQA Guidelines to the California Resources Agency.[10] In the transmittal letter accompanying the proposed amendments, OPR noted that although the analysis of greenhouse gas emissions in environmental documentation "presents unique challenges to lead agencies," the analysis "must be consistent" with existing CEQA principles. Therefore, OPR confirmed that the proposed amendments "suggest relatively modest changes to various portions of the existing CEQA Guidelines."

Certain amendments proposed by OPR are designed to assist lead agencies in determining the significance of environmental impacts resulting from greenhouse gas emissions. Specifically, OPR proposed the addition of a new CEQA Guidelines section, tentatively entitled "Determining the Significance of Impacts from Greenhouse Gas Emissions," which reiterates the existing CEQA principle that significance determinations require the "careful judgment" of a lead agency (see Cal. Code Regs., tit. 14, §15064, subd. (b)), and should be based on "a good-faith effort." The proposed section also provides that a lead agency has the discretion to determine whether to undertake a quantitative or qualitative analysis, or otherwise rely on performance based standards. Finally, the proposed section notes that a lead agency may consider the following factors when assessing the significance of greenhouse gas emissions: (1) the extent to which the project increases or reduces emission levels, when compared to the existing setting; (2) the extent to which the emissions resulting from the project exceed a threshold of significance that the lead agency determines applies to the project; and, (3) the extent to which the project complies with adopted regulations or requirements adopted to implement a statewide, regional or local plan for the reduction or mitigation of greenhouse gas emissions. Other proposed amendments recommended by OPR address mitigation measures relating to greenhouse gas emissions; the consideration of greenhouse gas emissions in the cumulative impacts analysis; the consistency of proposed projects with greenhouse gas reduction plans; and, the tierring and streamlining of environmental review through the analysis and mitigation of greenhouse gas emissions at a programmatic level.

At present time, OPR's proposed amendments are only recommendations to the California Resources Agency. The California Resources Agency will initiate a formal rulemaking process to certify and adopt the amendments, in accordance with the Administrative Procedures Act. This formal rulemaking process will include additional opportunities for public review and comment, and public hearings. This rulemaking process, pursuant to the requirements of SB 97, must be completed by January 1, 2010.

In its *Technical Advisory*, OPR requested that CARB submit recommendations regarding the appropriate significance criteria to use in environmental documentation, prepared pursuant to CEQA, when evaluating GHG emissions and global climate change impacts. Accordingly, on October 24, 2008, CARB issued its *Preliminary Draft Staff Proposal: Recommended Approaches for Setting Interim Significance Thresholds*

[10] See *CEQA Guidelines Sections Proposed To Be Added Or Amended*, Governor's Office of Planning and Research, available online at http://opr.ca.gov/index.php?a=ceqa/index.html (last visited April 15, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

for Greenhouse Gases under the California Environmental Quality Act (*Preliminary Draft Staff Proposal*).[11] In the *Preliminary Draft Staff Proposal*, CARB proposes tiered significance criteria for two types of projects: (1) industrial; and (2) commercial/residential. With respect to commercial/residential projects, CARB proposes a four tiered criterion:

- **Tier 1:** Is the project exempt from further analysis under existing statutory or categorical exemptions? If yes, there is a presumption of less-than-significant impacts with respect to climate change.

- **Tier 2:** Does the project comply with a previously approved plan that addresses GHG emissions? (The plan must satisfy certain requirements (*e.g.*, be consistent with AB 32 and/or SB 375, the latter of which is discussed further below).) If yes, there is a presumption of less-than-significant impacts with respect to climate change.

- **Tier 3:** Does the project satisfy certain minimum performance standards relating to construction and operational activities, or include equivalent mitigation measures, *and* emit no more than a yet to be determined quantity of emissions? If yes, there is a presumption of less-than-significant impacts with respect to climate change.

- **Tier 4:** The project will have significant climate change impacts.

CARB received public comment on the draft criteria; however, it is unclear if or when staff intends to present the criteria to the Board for adoption. As of this writing, the criteria remain draft recommendations, subject to further review and revision based on public comments and other information.

8.3.3.5 Senate Bill 375

Senate Bill 375 (SB 375) was passed by the California legislature on September 1, 2008, and chaptered into law on September 30, 2008. SB 375 requires CARB, working in consultation with California's metropolitan planning organizations (MPOs), to set regional GHG reduction targets for the automobile and light truck sector for 2020 and 2035. CARB must provide each MPO with its reduction target by September 30, 2010. Accordingly, CARB recently convened its Regional Targets Advisory Committee (RTAC), in February 2009, for its first meeting -- the mission of the RTAC is to develop and recommend a technical methodology by which CARB can set the GHG reduction targets.

[11] See *Preliminary Draft Staff Proposal: Recommended Approaches For Setting Interim Significance Thresholds For Greenhouse Gas Emissions Under The California Environmental Quality Act*, California Air Resources Board, available online at http://www.arb.ca.gov/cc/localgov/ceqa/meetings/102708/prelimdraftproposal102408.pdf (last visited February 9, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

Pursuant to SB 375, each MPO must incorporate the assigned GHG reduction target into its Regional Transportation Plan (RTP), which is used for long-term transportation planning, via a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS). Certain transportation planning and programming activities will need to be consistent with the SCS; however, SB 375 expressly provides that the SCS does not regulate the use of land, and further provides that local land use plans and policies (*e.g.*, general plan) are not required to be consistent with either the RTP or SCS.

SB 375 includes CEQA streamlining provisions for "transit priority projects," so long as the projects are consistent with the SCS. 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.

8.3.3.6 Title 24

The Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24), found in the California Code of Regulations, originally were established in 1978 in response to a legislative mandate to reduce California's energy consumption. 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 Title 24 standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The standards currently in use were formulated in October 2005. The CEC recently adopted a new set of standards on April 23, 2008, and the California Building Standards Commission approved them for publication on September 11, 2008. These new 2008 standards will be in effect as of July 1, 2009, such that all applications for building permits submitted after that date will be subject to the 2008 standards.

Title 24 does not specify building dimensions (*e.g.*, size, height, or orientation) and provides significant flexibility for window types, window amounts, insulation choice, and other parameters. Software is often used to calculate whether a building is Title 24 compliant by quantifying the built-environment energy use per square foot per year and the Time Dependent Valuation (TDV) of the energy use per square foot per year.[12] Title 24 compliance is based on TDV and not on annual energy use.

[12] TDV energy use is a parameter that speaks to the electricity burden that a building puts on the electric system. In general, there is a larger demand on the electricity supply system during the day (peak times) than at night (off peak). This results in a higher stress on the electricity delivery system per marginal unit electricity delivered at peak times. Therefore, the calculation of TDV weights energy used at different times at different values. For instance, for the same annual electricity use, a building that uses more electricity during the peak mid-day electrical usage period will have a higher TDV value.

On July 17, 2008, the California Building Standards Commission also adopted a green building code for all new construction statewide.[13] This green building code represents the first-in-the-nation statewide program. Adherence to the code's provisions, which will take effect 180 days from its adoption, will be voluntary until 2010. The green building code is applicable to commercial and residential construction in the public and private sectors, as well as schools, hospitals and other public institutions. The code sets targets for energy efficiency, water consumption, dual plumbing systems for potable and recyclable water, diversion of construction waste from landfills, and the use of environmentally sensitive materials in construction and design.

8.3.3.7 Other Reports

In 2007, the CEC issued a report, entitled *The Role of Land Use in Meeting California's Energy and Climate Change Goals* (CEC Land Use Report).[14] The CEC Land Use Report examines how land use decisions affect emissions associated with passenger vehicle use and building energy use.

The CEC Land Use Report notes that transportation accounts for 40 percent of California's GHG gases, thereby making transportation the single largest category of GHG emissions in the state of California. The GHG emissions are a function of Vehicle Miles Traveled (VMT) and the GHG emissions per mile traveled. As provided in the CEC Land Use Report, the VMT rate has been growing by 3 percent per year, and modeling undertaken by the California Department of Transportation estimates a similar growth rate in the future.[15] Although fuel efficiency may be influenced in the near future by federal and state regulations, the CEC Land Use Report observes that land use planners cannot easily affect the fuel efficiency of vehicles driven to and from new development.

Nonetheless, the CEC Land Use Report also finds that: (1) "[r]esidential density may have the most profound effect on travel behavior, with higher density reducing vehicle miles traveled per capita;" and (2) "balancing jobs and housing in a given area may also reduce vehicle miles traveled per capita by shortening commute distances." At present time, the CEC Land Use Report notes that a standard method for predicting VMT has not been fully established and more research in the area is needed. In other words, a simple assessment of residential density and jobs-housing balance may not accurately predict VMT per capita at a development.

---

[13] See *2007 California Green Building Standards Code*, Building Standards Commission, available online at http://www.bsc.ca.gov/prpsd_stds/default.htm (last visited February 9, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

[14] See *The Role Of Land Use In Meeting California's Energy And Climate Change Goals*, California Energy Commission, available online at http://www.energy.ca.gov/2007publications/CEC-600-2007-008/CEC-600-2007-008-SF.PDF (last visited February 9, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

[15] Estimates assume current population growth rates and the continuation of current development and transportation practices.

The CEC Land Use Report cites several energy saving project design features that developers have some control over, such as: (1) the on-site production of renewable energy; (2) the use of distributed electricity generation (DG); and (3) the orientation of residences in relation to the sun, so as to increase shade and incorporate roofs that reflect heat. The CEC Land Use Report also notes that different sizes and types of dwelling units influence the energy consumption of a home: "Residents of single-family detached housing, for example, are expected to consume 22 percent more primary energy than those of multifamily housing and 9 percent more than those of single-family attached housing."

8.3.4 Local Authorities and Administering Agencies

8.3.4.1 Los Angeles County Green Building Program

Three ordinances were adopted by the County of Los Angeles Board of Supervisors on October 7, 2008, and became effective January 1, 2009.[16] These ordinances include: (1) green building standards ordinance; (2) low-impact development standards ordinance; and, (3) drought-tolerant landscaping ordinance. The green building standards ordinance applies to four categories of development, with corresponding requirements for each: (1) small residential and nonresidential projects; (2) medium-sized residential projects; (3) medium-sized (*i.e.*, 10,000 to 25,000 square feet) nonresidential, commercial, mixed-use, or first-time tenant improvement projects; and, (4) large nonresidential, commercial, mixed-use, or first-time tenant improvement projects greater than 25,000 square feet, and all new high-rise buildings greater than 75 feet in height.

8.3.4.2 South Coast Air Quality Management District Significance Threshold

In the spring of 2008, the SCAQMD convened a stakeholders working group in connection with its development of a CEQA significance threshold for GHG emissions. In December 2008, SCAQMD adopted a threshold for projects where it is the lead agency under CEQA (*e.g.*, stationary source projects; air quality management plans and regulations). It is uncertain whether SCAQMD will adopt thresholds for other types of projects (*e.g.*, residential and commercial).[17]

---

[16] See *L.A. County Green Building Program*, Los Angeles County Department of Regional Planning, available online at http://planning.lacounty.gov/green (last visited February 9, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

[17] See *Greenhouse Gases (GHG) CEQA Significance Thresholds*, South Coast Air Quality Management District, available online at http://www.aqmd.gov/ceqa/handbook/GHG/GHG.html (last visited February 9, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

8.3.5 Other Guidance Addressing GHG Emission Inventories

The Greenhouse Gas Protocol Initiative is a multi-stakeholder partnership of businesses, non-governmental organizations (NGOs), governments, and others convened by the World Resources Institute (WRI), a US-based environmental NGO, and the World Business Council for Sustainable Development (WBCSD), a Geneva-based coalition of 170 international companies. The Greenhouse Gas Protocol Initiative prepared a step-by-step guide for *companies* to use in quantifying and reporting their GHG emissions.

WRI categorizes emissions into three scopes: Scope 1 -- direct GHG emissions; Scope 2 -- electricity-related indirect GHG emissions; and Scope 3 -- other indirect GHG emissions. These classifications indicate decreasing control on the company's part relative to GHG emissions. In other words, the GHGs that are produced directly from the company's operations are within Scope 1; the company has a great deal of control over those emissions. Scope 2 covers GHG emissions that result from the company's electricity use. While the company has a great deal of control over the amount of electricity use, it does not control the GHG intensity of electricity production. Finally, the company has little control over Scope 3 emissions, which include emissions resulting from activities such as an employee's work commute.

This section discloses the GHG emissions resulting from the proposed Project and, although the proposed Project is not a company, it is informative to evaluate project emissions in light of the WRI categories.

Scope 1: Direct GHG Emissions

> Direct GHG emissions occur from sources that are owned or controlled by the company, for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, *etc.*; emissions from chemical production in owned or controlled process equipment.

The only emissions that would result from the proposed Project that might be considered Scope 1 emissions are construction emissions and emissions associated with the loss of carbon sequestration capacity via vegetation removal. These are the only emissions over which the Project applicant has direct control.

Scope 2: Electricity-Related Indirect GHG Emissions

> Scope 2 accounts for GHG emissions from the generation of purchased electricity consumed by the company. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organizational boundary of the company. Scope 2 emissions physically occur at the facility where electricity is generated.

Although electricity consumption is accounted for in the proposed Project's GHG emissions inventory, the electricity would be consumed by the eventual occupants of the residential and nonresidential buildings facilitated by approval of the proposed Project. The proposed Project itself will not purchase this electricity. Therefore, the electricity-related emissions associated with the proposed Project are considered to fall within Scope 3, as described below.

Scope 3: Other Indirect GHG Emissions

> Scope 3 is an optional reporting category that allows for the treatment of all other indirect emissions. Scope 3 emissions are a consequence of the activities of the company, but occur from sources not owned or controlled by the company. Some examples of scope 3 activities are extraction and production of purchased materials; transportation of purchased fuels; and use of sold products and services.

All emissions, other than the construction-related and vegetation removal-related emissions discussed above, quantified in this inventory would likely be considered Scope 3. Residents and users of the development facilitated by the proposed Project would not be owned or controlled by the Project applicant. Although, the Project applicant is unable to restrict the amount of electricity uses, miles driven, *etc*.; however, as discussed above, certain aspects of the development can influence these issues.

8.3.6 Existing Conditions

This section addresses the phenomenon of global climate change, including its causal factors and the consequences thereof, and surveys GHG emissions levels from statewide, national, and global perspectives.

8.3.6.1 Global Climate Change

Global climate change and *global warming* are both terms that describe changes in the earth's climate. *Global climate change* is a broader 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 term, global climate change.

While global warming can be caused by natural processes, the IPCC reports conclude that there is a scientific consensus that human activities have contributed and continue to contribute, in some part, to current global warming, as well.[18] This man-made, or anthropogenic, warming largely is caused by

[18] See *Climate Change 2007: The Physical Science Basis, Summary for Policymakers*, Intergovernmental Panel on Climate Change, available online at http://www.ipcc.ch/ipccreports/assessments-reports.htm (last visited February 9, 2009). But see *U.S. Senate Minority Report: More Than 650 International Scientists Dissent Over Man-Made Global Warming Claims Scientists Continue To Debunk "Consensus" In 2008*, U.S. Senate Environment and Public Works Committee Minority Staff Report available online at http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=83947f5d-d84a-4a84-ad5d-6e2d71db52d9&CFID=5424158 &CFTOKEN=21727292 (last visited February 9, 2009). (These documents are available for public inspection and review at the County of Los

increased emissions of "greenhouse gases," which keep the earth's surface warm. This is called "the greenhouse effect." The greenhouse effect and the role greenhouse gases play are described below.

8.3.6.2 The Greenhouse Effect

By definition, greenhouses allow sunlight to enter a defined space 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.[19] Whereas the GHGs in the atmosphere let solar radiation through, the infrared radiation is trapped by GHGs, resulting in the warming of the earth's surface.[20]

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 greenhouse gases, such as CO_2, methane (CH_4), nitrous oxide (N_2O), and water vapor (H_2O), have been present naturally for millennia at relatively stable levels in the atmosphere that are adequate to keep temperatures on earth hospitable. Without these greenhouse gases, 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 8.0-1**, below, 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.[21] As the concentrations of greenhouse gases increase, more infrared radiation is trapped, and the earth is heated to higher temperatures. This process is described as "human-induced global warming."

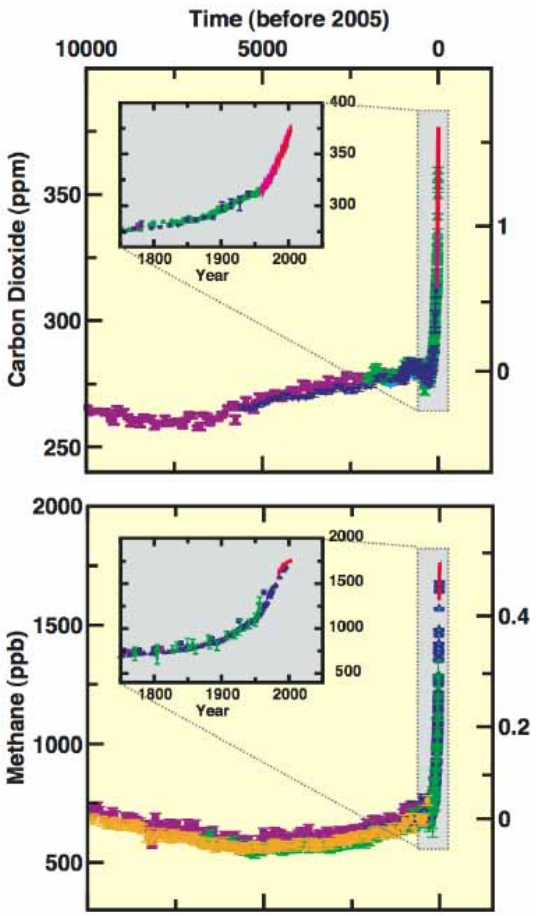
Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and are incorporated by reference.)

[19] All light, be it visible, ultraviolet, or infrared, carries energy.

[20] Infrared radiation is characterized by longer wavelengths than solar radiation. Greenhouse gases reflect radiation with longer wavelengths. As a result, instead of escaping back into space, greenhouse gases reflect much infrared radiation (*i.e.*, heat) back to Earth.

[21] Examples of natural processes include the addition of GHGs to the atmosphere from respiration, fires, and decomposition of organic matter. The removal of greenhouse gases is mainly from plant and algae growth and absorption by the ocean.

Figure 8.0-1
Carbon Dioxide and Methane Concentrations[22]



In 2007, the IPCC[23] 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, "The Physical Science Basis."[24] This report stated that there is general scientific consensus that the global increases in greenhouse gases since 1750 are due mainly to human activities, such as fossil fuel use, land use change (*e.g.*, deforestation), and agriculture. In addition, the report stated that it is likely that these changes in greenhouse gas concentrations have contributed to global warming.

---

[22] Adapted from *Climate Change 2007: The Physical Science Basis, Summary for Policymakers*, *supra* footnote 18, Figure SPM-1.

[23] The World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) established the IPCC in 1988; it is open to all members of the United Nations (UN) and WMO.

[24] See, *supra*, footnote 18.

The high confidence levels of claims in this report are due to the large number of simulations run and the broad range of available climate models.

8.3.6.3 Greenhouse Gases and Their Emissions

The term "greenhouse gases" includes gases that contribute to the natural greenhouse effect, such as CO_2, CH_4, N_2O and H_2O, as well as gases that are man-made and emitted through the use of modern industrial products, such as hydrofluorocarbons (HFCs), chlorinated fluorocarbons (CFCs), and sulfurhexafluoride (SF_6). These last two families of gases, while not naturally present, have properties that also cause them to trap infrared radiation when they are present in the atmosphere, thus making them greenhouse gases. These six gases comprise the major GHGs that are recognized by the Kyoto Protocol.[25] One GHG not recognized by the Kyoto Protocol is atmospheric water vapor, as there is no obvious correlation between water vapor concentrations and specific human activities. Water vapor appears to act in a feedback manner: higher temperatures lead to higher water vapor concentrations, which in turn cause more global warming.

The effect each of these gases has on global warming is determined by a combination of: (1) the volume of their emissions; and (2) 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 carbon dioxide. Methane and nitrous oxide are substantially more potent than carbon dioxide, with GWPs of 21 and 310, respectively. However, these natural greenhouse gases are nowhere near as potent as sulfur hexafluoride and fluoromethane, which have GWPs of up to 23,900 and 6,500 respectively. GHG emissions typically are measured in terms of mass of CO_2e emissions, which is the product of the mass of a given GHG and its specific GWP.

The most important greenhouse gas in human-induced global warming is carbon dioxide. While many gases have much higher GWPs, carbon dioxide is emitted in vastly higher quantities. Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in carbon dioxide emissions, and thus substantial increases in atmospheric carbon dioxide concentrations. In 2005, atmospheric carbon dioxide 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, carbon dioxide is a major factor in human-induced global warming because of its lifespan in the atmosphere of 50 to 200 years.

---

[25] The Kyoto Protocol to the United Nations Framework Convention on Climate Change requires parties to proceed "with a view to reducing their overall emissions of such [greenhouse] gases by at least 5 percent below 1990 levels in the commitment period 2008 to 2012." (Kyoto Protocol, Article 3, ¶1.) The treaty was negotiated in Kyoto, Japan in December 1997, opened for signature on March 16, 1998, closed for signature on March 15, 1999, and came into force on February 16, 2005. The United States is a signatory to the Kyoto Protocol, but neither President Clinton nor President Bush submitted the treaty to Congress for approval. Therefore, because the treaty has not been ratified by Congress, the terms of the treaty are not binding on the United States. (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

The second most prominent GHG, methane, also has 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 1,774 parts per billion (ppb), as compared to 715 ppb. Methane has a relatively short atmospheric lifespan of only 12 years, but has a higher GWP than carbon dioxide.

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.

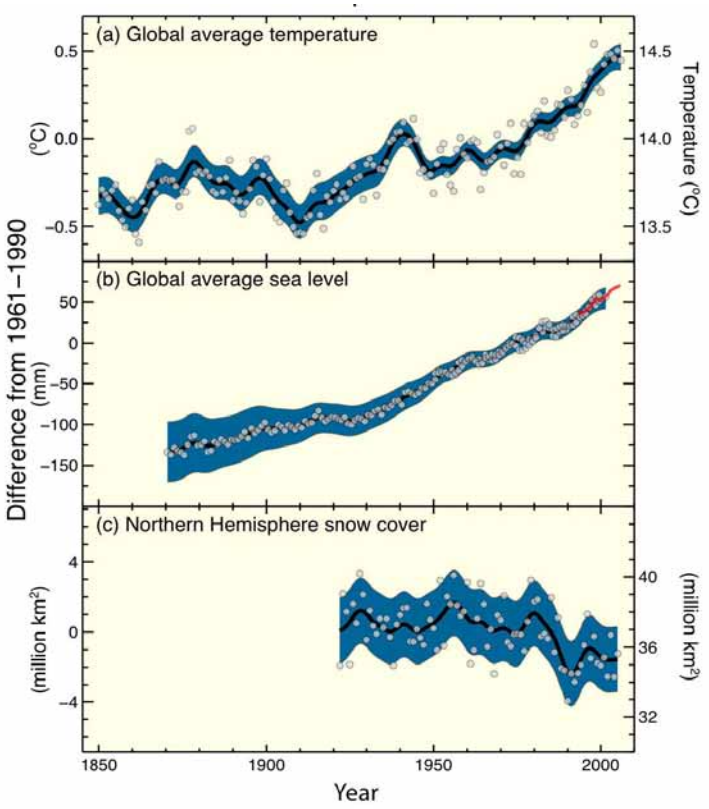
Besides carbon dioxide, methane and nitrous oxide, there are several gases and categories of gases that were not present in the atmosphere in pre-industrial times but now exist and contribute to global warming. These include CFCs, used often as refrigerants, and their more stratospheric-ozone-friendly replacements, HFCs. Fully fluorinated species, such as sulfur hexaflourode (SF_6) and tetrafluoromethane (CF_4), are present in the atmosphere in relatively small concentrations, but have extremely long life spans of 50,000 and 3,200 years each, also making them potent greenhouse gases.

8.3.6.4 The Effects of Global Warming

8.3.6.4.1 *Impacts, Generally*

As discussed above, the IPCC has concluded that there is scientific consensus that global climate change will increase the frequency of heat extremes, heat waves, and heavy precipitation events. Currently accepted models predict that continued greenhouse gas emissions at or above current rates will induce more extreme climate changes during the 21st century than were observed during the 20th century. A warming of about 0.2°C per decade is projected. Even if the concentrations of all greenhouse gases and aerosols are kept constant at year 2000 levels, a further warming of about 0.1°C per decade would be expected. A faster temperature increase will lead to more dramatic, and more unpredictable, localized climate extremes. Other likely direct effects of global warming include an increase in the areas affected by drought, an increase in tropical cyclone activity and higher sea levels, as well as the continued recession of polar ice caps. There are already some identifiable signs that global warming is taking place. In addition to substantial ice loss in the Arctic, the top seven warmest years since the 1890s have been after 1997. **Figure 8.0-2** shows the rise of global temperatures, the global rise of sea level, and the loss of snow cover from 1850 to the present.

Figure 8.0-2
Global Warming Trends[26]



In April 2007, 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" in its Working Group II Report.[27] In this report, the IPCC concludes that although some people will gain and some will lose because of global climate change, the overall change will be of social and economic losses. These negative effects will likely be disproportionately shouldered by those who lack the resources needed to adapt to a change in climate. In addition, it is expected that biodiversity of terrestrial and freshwater ecosystems will be compromised and that the ranges of infectious diseases will likely increase.

---

[26] Adapted from *Climate Change 2007: The Physical Science Basis, Summary for Policymakers*, *supra*, footnote 18, Figure SPM-3.

[27] See *Climate Change 2007: Impacts, Adaptation and Vulnerability*, Intergovernmental Panel on Climate Change, available online at http://www.ipcc.ch/ipccreports/assessments-reports.htm (last visited February 9, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

8.3.6.4.2 *Impacts on California, Specifically*

Global temperature increases may have a series of significant negative impacts on the health of California residents and the California economy.[28] One result of the higher temperatures caused by global climate change may be compromised air quality. Warmer temperatures can cause more ground level ozone, a pollutant that causes eye irritation and respiratory problems. Another impact may result due to California's primary reliance on snowmelt for its drinking water and summertime irrigation water. Global climate change could alter the seasonal pattern of snow accumulation and snowmelt and threaten the availability of water. Climatic changes also would affect agriculture, a major California industry, which could result in economic losses.

8.3.6.5 Global, National, and State GHG Emissions Inventories

Worldwide emissions of GHGs in 2004 were 26.8 billion tonnes of CO_2e per year. In 2004, the United States emitted about 7 billion tonnes of CO_2e, or about 24 tonnes/year/capita. Over 80 percent of the GHG emissions in the United States are comprised of CO_2e emissions from energy-related fossil fuel combustion. In 2004, California emitted 0.497 billion tonnes of CO_2e, or about five percent of U.S. emissions. If California were a country, it would be the 16th largest emitter of greenhouse gases in the world. This large number is due primarily to the sheer number of people in 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, its temperate climate, and the fact that it relies on out-of-state energy generation.

In 2004, 81 percent of greenhouse gas emissions from California were attributable to carbon dioxide emissions from fossil fuel combustion, with four percent comprised of CO_2 from process emissions. Methane and nitrous oxide accounted for 5.6 percent and 6.8 percent of total CO_2e respectively, and high GWP gases[29] accounted for 2.9 percent of the CO_2e emissions. Transportation, including industrial and residential uses, is by far the largest end-use category of GHGs in California.[30]

---

[28] For additional information regarding the impact of global climate change on sensitive biological resources and water supplies, please see **Appendix 8.0** of this EIS/EIR. The appendices contain literature surveys that were undertaken with respect to global climate change and its effects on California's water supplies and sensitive biological resources. Ultimately, due to the lack of an established regulatory framework, and the general concurrence of the scientific and regulatory communities, the surveys conclude that additional study and evaluation is still required with respect to the impacts of global climate change on water supplies and sensitive biological resources; and, thus, the evaluation concludes that such impacts are too speculative to assess any further at this time.

[29] Such as HFCs and PFCs.

[30] As of 2004, fossil fuel consumption in the transportation sector was the single largest source of California's GHG emissions (41.2 percent), with the industrial sector as the second largest source (22.8 percent), followed by electrical production from both in-state and out-of-state sources (19.6 percent), agricultural and forestry (8.0 percent), and other activities (8.4 percent). (See *Climate Action Team Report to Governor Schwarzenegger and the Legislature*, California Environmental Protection Agency,

8.4 IMPACT SIGNIFICANCE CRITERIA

At present time, neither federal, state, nor local agencies have adopted significance thresholds for the analysis of GHG emissions. (See Cal. Code Regs., tit. 14., § 15064.7, subd. (b).) While many public agencies adopt regulatory standards as thresholds, the CEQA Guidelines do not require adoption of regulatory thresholds. (*Id*. at subd. (a).)

For purposes of this EIS/EIR, CDFG has determined it is appropriate to rely on AB 32 as a benchmark and use the statute to inform its judgment as to whether the proposed Project's GHG emissions would result in a significant impact. (See Cal.Code.Regs., tit.14, § 15064, subd. (f)(1).) Accordingly, the following significance criterion is used to assess impacts:

> Will the proposed Project's GHG emissions impede compliance with the GHG emission reductions mandated in AB 32?

While SB 97 requires the CEQA Guidelines to be amended to address global climate change, those revisions are not required to occur until January 1, 2010 (see Pub. Resources Code, § 21083.05). As previously discussed, on April 13, 2009, OPR transmitted its proposed recommendations to the California Resources Agency, which now must initiate and complete the formal rulemaking process. Although the California Resources Agency may decide to reject or revise OPR's proposed amendments to the CEQA Guidelines, at the present time, the significance criterion identified above is consistent with OPR's proposed amendments, which recognize the discretion afforded to lead agencies to identify and apply an appropriate significance criterion.

As previously discussed, CARB also is developing interim significance criteria for the analysis of greenhouse gas emissions under CEQA. Currently, CARB's draft guidance provides potential significance criteria for industrial projects and residential/commercial projects. Coordination efforts are underway with CARB to ensure that it acknowledges the discretion afforded to lead agencies, under CEQA, to identify their own appropriate significance criteria and evaluate the significance of impacts, so long as the analysis is supported by substantial evidence.

The Corps' position under NEPA is that there are no science-based GHG significance thresholds, nor has the federal government or the state adopted any by regulation. In the absence of an adopted or science-based GHG significance standard, the Corps will not utilize the CEQA significance criterion being used by CDFG, propose a new GHG significance standard, or make a NEPA impact determination for GHG emissions anticipated to result from the proposed Project or any of the alternatives. Rather, in compliance with NEPA implementing regulations, the anticipated GHG emissions will be disclosed for the proposed Project and each alternative without the Corps expressing judgment as to the significance of such emissions.

---

available online at http://www.climatechange.ca.gov/climate_action_team/index.html (last visited February 9, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

8.5 IMPACTS OF THE PROPOSED PROJECT AND ALTERNATIVES

8.5.1 Impacts of Alternative 1 (No Action/No Project Alternative)

Under Alternative 1, no action would be taken and the proposed Project would not be developed. Therefore, under this alternative, there would be no construction of bridges, bank stabilization, grade stabilizer structures, detention basins, storm drains, or other RMDP/SCP components. Consequently, Alternative 1 would not result in any direct impacts to the environment. Similarly, with respect to indirect and secondary impacts, under Alternative 1, no infrastructure would be built and no permits issued to facilitate development within the Specific Plan area, the VCC planning area, or in a portion of the Entrada planning area. Existing uses in the Project area (*e.g.*, agriculture, grazing, oil leasing) emit greenhouse gas emissions; however, such activities result from existing conditions. Therefore, Alternative 1 would not have the potential to affect global climate change, directly, indirectly, or otherwise.

On the other hand, arguably, population growth in the Santa Clarita Valley will continue to occur irrespective of whether the Specific Plan area and VCC and Entrada planning areas are built out to accommodate such growth. The demand for residential and commercial development would then need to be accommodated elsewhere, and these other developments may be less energy efficient and apply fewer sustainable development principles than the build-out that would be facilitated throughout the Project area by approval of the proposed Project. Accordingly, even under a no project scenario, Alternative 1 may result in a potentially significant climate change impact if development elsewhere were to impede California's compliance with the mandates of AB 32.

8.5.2 Impacts of Alternative 2 (Proposed Project Alternative)

8.5.2.1 Direct\Indirect Impacts

8.5.2.1.1 *RMDP Direct/Indirect Impacts*

RMDP Installation. Under the proposed Project, infrastructure would be constructed in and adjacent to the Santa Clara River and tributary drainages within the Project area. The proposed RMDP infrastructure is described in detail in **Subsection 2.6** of the EIS/EIR. The one-time emission of 34,487 tonnes of CO_2e would result from the land use changes and construction-related activities necessary to install the RMDP's infrastructure components.

Land Use Emissions. The removal of existing vegetation on the RMDP study area, in order to accommodate installation of RMDP infrastructure, would result in GHG emissions by reducing the existing carbon sequestration capacity of the Project area. Specifically, the removal of existing vegetation would result in the one-time emission of 9,523 tonnes of CO_2e.

Construction Emissions. GHG emissions would result from various construction-related activities required to install the bridges, buried bank stabilization, *etc*., provided for in the RMDP. The construction emissions resulting from installation of the RMDP infrastructure would occur on a one-time basis, and are limited to a finite period of time. The total number of one-time GHG emissions attributable to

construction-related activities required for installation of the RMDP infrastructure would be 24,965 tonnes of CO_2e.

Specific Plan Area. Under Alternative 2, the proposed RMDP infrastructure improvements would facilitate build-out of the previously approved Specific Plan, which includes residential and commercial uses, public facilities, infrastructure, open space, and recreation facilities. Under the proposed Project, installation of the RMDP would indirectly facilitate build-out of 20,885 residential units and 5.55 million square feet of commercial uses, along with a total of approximately 10,200 acres of open space. (Please refer to **Subsection 3.4.2.2** for additional information regarding the development enabled by Alternative 2.) Build-out of the Specific Plan area would indirectly result in GHG emissions (specifically, 469,428 tonnes of one-time CO_2e emissions and 291,618 tonnes of annual CO_2e emissions), as summarized below.

Land Use Emissions. The removal of existing vegetation within the Specific Plan area in order to accommodate the previously approved Specific Plan land uses would contribute to net GHG increases by reducing the existing carbon sequestration capacity of the Specific Plan area. That is, by removing vegetation that currently reduces CO_2e levels, existing GHG emissions levels would increase. Notably, after completion of Specific Plan build-out, many privately owned areas would be re-vegetated with trees, shrubs, and other vegetation. These new growth areas could sequester more CO_2e from the atmosphere than was sequestered predevelopment due to the re-vegetation of the areas with vegetation that more efficiently processes carbon dioxide.

In order to calculate the one-time release of GHGs due to changes in carbon sequestration capacity, a four step methodology, based on IPCC guidelines, was utilized: (1) identify and quantify the various land types that will change due to the development;[31] (2) estimate the biomass associated with each land type; (3) calculate CO_2e emissions from the net change of vegetation; and (4) calculate the overall change in sequestered CO_2e. To simplify, the difference between the total predevelopment sequestered CO_2e and the postdevelopment sequestered CO_2e is the one-time CO_2e released from clearing the vegetation.

Several assumptions were utilized in quantifying the emissions resulting from land use/vegetation changes. First, the IPCC provides default annual CO_2e sequestration rates on a per tree basis. The numbers given are for 10 *likely* species classes in urban areas, and range from a high of 0.052 tonne CO_2e per year in hardwood maple to a low of 0.012 tonne CO_2e /year in Juniper trees. Alternatively, an average of 0.035 tonne CO_2e /year per tree can be assumed if the tree type is not known. Because the tree types that will be planted on the Project area are not known at this time, the 0.035 tonne CO_2e /year per tree rate was utilized.

Second, urban trees are only net carbon sinks when they are actively growing, and the IPCC assumes an active growing period of 20 years. Thereafter, the accumulation of carbon in biomass slows with age, and is offset completely by losses from clipping, pruning and occasional death. Further, actual active growing periods are subject to, among other things, species type, climate regime, and planting density. Trees also

[31] Areas temporarily disturbed that would eventually recover were not counted as vegetation removed, as there is no net change in vegetation or land use.

may be replaced at the end of the 20-year cycle, which would result in additional years of carbon sequestration. However, this replacement would be offset by the potential net release of carbon from the removal of the replaced tree.

Approximately 35,000 new trees would be planted within the Specific Plan area during build-out. The additional carbon sequestration provided by the 35,000 new trees would reduce the net CO_2e emissions from land use change to approximately 33,895 tonnes of CO_2e.

Construction Emissions. There are three major construction phases for an urban development: demolition; site grading; and building construction. Build-out of the Specific Plan site would not include a demolition phase because the construction would occur on previously undeveloped land that is presently being utilized for agricultural purposes. GHG emissions from these construction phases are largely attributable to fuel use from construction equipment and worker commuting.[32]

GHG emissions from construction equipment that would be used for grading were calculated by relying on URBEMIS. The precise formula utilized to calculate CO_2e emissions for each type of construction equipment is: equipment emissions [grams] = total equipment-hours * emission factor [grams per brake horsepower-hour] * equipment brake horsepower * load factor. (The contribution of CH_4 and N_2O from diesel construction equipment to overall GHG emissions likely is small (< 1 percent of total CO_2e), and, therefore, was not included in this calculation.) The total amount of GHG emissions from grading construction equipment utilized during build-out of the Specific Plan site would be a one-time emission of approximately 169,297 tonnes of CO_2e.[33]

URBEMIS also was utilized to calculate CO_2e emissions from off-road construction equipment, worker commuting, and vendor trips for the building construction phase of Specific Plan build-out, based on the size and type of buildings specified by the user and URBEMIS defaults.[34] The total amount of GHG emissions from the building construction phase for Specific Plan development would be a one-time emission of 266,236 tonnes of CO_2e.

In sum, the total amount of GHG emissions from construction-related activities occurring during build-out of the previously approved Specific Plan, including worker commuting during those phases, would be approximately 435,533 tonnes of CO_2e.

---

[32] Three programs (URBEMIS, OFFROAD2007, and EMFAC2007) were utilized to calculate construction emissions associated with grading.

[33] This amount includes the GHGs that would be emitted during the grading phase from commuting worker vehicles. These worker emissions occur in two ways: running emissions, produced by driving the vehicle; and start-up emissions, produced by turning the vehicle on. The majority of worker emissions would be running emissions.

[34] URBEMIS generated values were used for vendor trip length; vendor trips per building built; and number of pieces of equipment.

Residential Emissions. Residential buildings generate GHG emissions as a result of activities requiring electricity and natural gas as energy sources. When electricity is used in a residential building, the electricity generation typically takes place off site. The amount of energy, and, therefore, the associated GHG emissions emitted per dwelling unit, varies with the type of residential building. The major types of residential buildings that would be located on the Specific Plan site are single-family homes, attached townhomes or condominiums, and apartments.

Energy use in residential buildings is divided into two categories: (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 the first category (energy consumed by the built environment), which includes the HVAC system, water heating, and some fixed lighting. Examples of "plug-in" energy use include refrigeration, cooking, lighting, *etc*. Energy uses for the two categories identified above were calculated separately, and the resulting energy use quantities were then converted to GHG emissions by using the appropriate emission factors. This calculation incorporated information on local electricity production.[35]

- **Energy Use in the Built Environment.** The Micropas software was used to calculate the built environment energy use per square foot per year, and the TDV of the energy use per square foot per year in order to determine Title 24 compliance.[36] TDV energy use is a parameter that speaks to the electricity burden that a building puts on the electrical system. In general, there is a larger demand on the electricity supply system during the day (peak times) than at night (off peak).

  The output of the Micropas runs provided annual electricity use for the HVAC system, and annual natural gas usage for the heating and domestic hot water systems per building. These energy use values were divided by the number of dwelling units per building to calculate the annual energy use of each dwelling unit type for electricity (in kilowatt hours per year) and for natural gas (in hundred cubic feet per year).

  Electricity use in standard Title 24 compliant single-family homes, attached homes, and apartments is 8,052, 5,580, and 4,413 kilowatt hours per dwelling unit per year, respectively. Natural gas use in standard Title 24 compliant single-family homes, attached homes, and apartments is 449, 264, and 231 hundred cubic feet per dwelling unit per year, respectively.

---

[35] The Southern California Edison specific emission factor for electricity deliveries used to calculate all electricity-related emissions was 665.72 lbs CO_2/MWh. (See *Climate Action Registry Reporting Online Tool*, California Climate Action Registry, available online at https://www.climateregistry.org/CARROT/public/reports.aspx (last visited February 10, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

[36] Title 24 determines compliance by comparing the energy use of a modeled, or "proposed home," to a minimally Title 24 compliant "standard home" of equal dimensions; accordingly, Title 24 focuses on building energy efficiency per square foot, and not the overall dimensions of a dwelling unit.

Newhall Land has committed to making all new homes 15 percent more energy efficient than what Title 24 (2005) requires, or 15 percent more energy efficient on a TDV basis.[37] To determine the benefits of this 15 percent energy efficiency commitment, the energy use numbers calculated above were multiplied by 0.85. The applicant's commitment to provide residential buildings 15 percent better than Title 24 requires would reduce the electricity use for single-family homes, attached homes, and apartments to 7,590, 5,327, and 4,201 kilowatt hours per dwelling unit per year, respectively. This commitment also would reduce the natural gas use for single-family homes, attached homes, and apartments to 381, 224, and 197 hundred cubic feet per dwelling unit per year, respectively.

- **Plug-In Energy Use.** The plug-in energy use was calculated by utilizing data provided by the EIA. In an effort to represent the dwelling units that would be present on the Specific Plan site, the data was filtered by climate zone,[38] state, square footage, and type of residence.[39]

  The EIA data covered the electricity use associated with lighting, electric freezers, dishwashers, cooking units, and dryers. This energy use was calculated as the energy use per square foot for each building type from the EIA data. This value was then multiplied by the square footage of each dwelling unit modeled by Micropas to estimate energy use per dwelling unit.

  The EIA data also covered the electricity use associated with refrigerators. Refrigeration energy use is assumed to not scale with dwelling unit size. As such, the average energy use for refrigerators was calculated as energy use per dwelling unit of the specified building type from the EIA data.

Ultimately, energy use data were multiplied by emission factors to generate CO_2e intensity values (CO_2e emissions/dwelling unit). The homes that are 15 percent more energy efficient than Title 24 (2005) requires demand less electricity and natural gas. In fact, the single-family homes, attached homes, and apartments emit 10, 9, and 10 percent less CO_2e per year than the standard Title 24 compliant homes, respectively. Specifically, with standard Title 24 compliance, each single-family home, attached home, and apartment would emit 4.73, 3.04, and 2.52 tonnes of CO_2e/year, respectively. With 15 percent improvements over Title 24, each single-family home, attached home, and apartment would emit 4.25, 2.76, and 2.28 tonnes of CO_2e/year, respectively.

The applicant also may use renewable electricity, equivalent to the installation of one 2.0 kW photovoltaic (*i.e.*, solar) power system, for each single-family detached residence. Here, it is conservatively assumed that a 2 kW system would be installed, although larger systems (2.3 kW) may be more common. ENVIRON's Technical Report estimates that a 2 kW system in the Santa Clarita Valley

[37] Although annual energy use and TDV energy do not necessarily scale linearly with each other, this analysis assumed that all sources covered by Title 24 that are modeled in the ACM would uniformly use 15 percent less annual energy.

[38] U.S. climate zone 4 was used (< 2,000 cooling degree days (CDD), < 4,000 heating degree days (HDD)). This climate zone is defined differently than the 16 California climate zones, of which the Specific Plan area is in climate zone 9.

[39] Single-family detached and multi-family (5+ dwelling units) were the two housing types queried.

will generate 3,356 kW-hr/year. This value was subtracted from the single-family residence electricity use to estimate GHG emission reductions from utilizing renewable energy. With 15 percent improvements over Title 24 (2005) and with renewable energy, the dwelling units would emit a total of approximately 59,286 tonnes of CO_2e per year, or approximately 13,865 tonnes less CO_2e than minimally Title 24 compliant dwelling units without renewable energy.

Table 8.0-3, below, provides a comparative assessment of the four residential build-out scenarios evaluated in this inventory, setting forth their respective CO_2e emissions and, if applicable, the percentage of energy savings when compared to the standard Title 24 compliant home.

Table 8.0-3
Alternative 2 Estimated Residential Emissions For The Specific Plan Site

Build-Out Scenario	Final CO_2 (Tonnes of CO_2e/year)	Percent Saved Over Title 24
Title 24 Compliant	73,151	--
Title 24 Compliant and Renewable Energy	66,375	9%
15 Percent Better Than Title 24 and Without Renewable Energy	66,062	10%
15 Percent Better Than Title 24 and With Renewable Energy (Applicant's Commitment)	59,286	19%

Source: ENVIRON, 2009.

Several factors lead to uncertainties in the above analysis. First, the exact design of the residential buildings that would be built is unknown. However, this uncertainty is expected to neither over- nor underestimate emissions because each residential building will be Title 24 compliant. Title 24 grants enough flexibility that if a designer puts in more windows than is "allowed" under the prescriptive measures, the energy efficiency losses can be offset by improving the window quality, or installing a more efficient HVAC system.

Relatedly, energy use varies considerably depending upon the design of the home; the residential units on the Specific Plan site would vary considerably in size, layout, and overall design. The parameters used in this inventory are intended to represent the upper quartile of homes relative to sizes in each category. As such, energy use from the homes that actually would be built in the Project area are anticipated to be lower.

Finally, built environment and plug-in energy use varies considerably depending upon the home owners' habits and the appliances, lights, and other plug-in electricity users installed by the homeowner. Newhall Land would have little, if any, influence over these choices made by the homeowner. Current median behavior attributes are presented here. To the extent that individuals are becoming more energy conscious, and/or appliances become more energy efficient, this inventory tends to overestimate energy use in the future.

Nonresidential Emissions. Nonresidential buildings include all structures, except residences, that may exist in a development, such as government, municipal, commercial, retail, and office space. The amount of energy, and, therefore, the associated GHG emissions emitted per square foot of available space varies with the nonresidential building's use type. For example, restaurants are far more energy intensive than warehouses, which have little climate conditioned space. Accordingly, information on the type of nonresidential buildings that would be built out on the Specific Plan site following RMDP installation was used to estimate the GHG emissions.

Newhall Land provided data summarizing the nonresidential building categories that would be built out within the Specific Plan area, which include:

1. grocery;
2. miscellaneous retail/commercial/office (*i.e.*, restaurant (20 percent); office (25 percent); and retail (55 percent));
3. hotel;
4. business park/industrial (*i.e.*, office (30 percent); storage (20 percent); and research and development (50 percent));
5. public safety (*i.e.*, fire station (100 percent)); and
6. institutional (*i.e.*, schools (75 percent); and library (25 percent)).

Like residential buildings, GHGs are emitted as a result of activities in nonresidential buildings that require electricity and natural gas as energy sources. Combustion of any type of fuel emits CO_2 and other GHGs directly into the atmosphere; when this occurs in a nonresidential building it is a direct emission source associated with that building. GHGs also are emitted, indirectly, during the generation of electricity from fossil fuels, which typically takes place off site. Fuel combustion generates CH_4 and N_2O, as well; however, the emissions of these GHGs typically comprise less than one percent of CO_2e emissions from electricity generation and natural gas consumption.[40] Fuel oil, kerosene, liquefied petroleum gas, and wood also can be used as fuels, but generally only contribute small amounts as combustion sources.

As with residential buildings, energy use in nonresidential buildings is divided into two categories: (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.

- **Energy Use in the Built Environment.** As described above, eQUEST is a building energy efficiency modeling package approved by the CEC as a 2005 Title 24 nonresidential ACM. The eQUEST model runs for the Project area used default parameters for building area, number of floors, cooling/heating equipment type, etc., specific to each of the building types identified above.

[40] The methane and nitrous oxide emission factors are negligible compared to the total CO_2 emission factor for electricity generation in California.

However, certain eQUEST parameters were customized to better reflect the build-out conditions of Project area, including: (1) energy code compliance analysis = "CA Title 24;" (2) building type; (3) region = Pasadena (CZ9); and (4) city = Newhall Soledad. The output of the eQUEST runs provided annual electricity and annual natural gas usage. These values were divided by the square footage of the buildings to calculate the energy intensity (energy per square foot) of each building type for electricity and natural gas.

- **Plug-In Energy Use.** Because the eQUEST software calculates energy use from the built environment only, and does not calculate energy use from plug-ins (*e.g.*, task lighting, office equipment, and plug-in cooking equipment), the overall electricity use for the building types was calculated by estimating the plug-in electricity use based on data provided by the EIA. The end use data provides an estimate of the total electricity used in various buildings, as well as an estimate of the percent of the total energy used comprised by plug-in electricity in each building type. The built environment energy use values for each building type obtained from eQUEST were increased based on the percentage of total energy use comprised by plug-in electricity derived from the EIA data. To calculate total electricity use for the building types evaluated using eQUEST, eQUEST results were divided by the percentage energy use by the built environment energy for each building type.

The calculated energy use quantities for each building type were converted to GHG emissions by multiplying the energy use quantity by the appropriate emission factor, which required incorporation of information on local electricity production. As projected, the annual CO_2e emissions for different building types would range from 1.68 tonnes per 1,000 square foot for storage to 24.94 tonnes per 1,000 square foot for quick service restaurants. Most building types would emit between three and eight tonnes of CO_2e per 1,000 square feet per year.

Newhall Land has committed to making all new nonresidential buildings 15 percent more energy efficient than what Title 24 (2005) requires, or 15 percent more energy efficient on a TDV basis. The applicant's commitment reduces the energy use for all building types. Because plug-ins are not covered under Title 24, the ultimate decrease in energy use was less than 15 percent, but still substantial**.** Due to the project design feature of reducing energy use 15 percent below that required by Title 24, a reduction of over 4,300 tonnes of CO_2e per year would be realized from the nonresidential buildings.

The applicant also may use the renewable equivalent of 1,920 solar power systems for the nonresidential buildings that would be built on the Specific Plan site (*i.e.*, one 2.0 kilowatt system for every 1,600 square feet of nonresidential roof area). This renewable energy would offset approximately 1,900 additional tonnes of CO_2e annually, or four percent of the nonresidential CO_2e emissions.

Overall, these project design features (15 percent better than Title 24 (2005) and renewable energy) reduce the nonresidential energy use by 12 percent. These measures would bring the overall CO_2e emissions associated with nonresidential energy use down to approximately 45,208 tonnes of CO_2e/year. A summary of the emissions inventory results is provided in **Tables 8.0-4** and **8.0-5**.

Table 8.0-4
Alternative 2 Estimated Nonresidential Emissions By Building Type For The Specific Plan Site

Building Type	Title 24 (2005) Compliant (Tonnes of CO_2e/year)	15 Percent Better Than Title 24 (2005) (Tonnes of CO_2e/year)
Grocery	3,104	2,963
Miscellaneous Retail/ Commercial/Office	40,825	37,435
Hotel	788	710
Business Park/Industrial	3,857	3,396
Public Safety	359	300
Institutional (Schools, Libraries, *etc*.)	2,620	2,350

Source: ENVIRON, 2009.

Table 8.0-5
Alternative 2 Estimated Nonresidential Emissions For The Specific Plan Site

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e /year)
Title 24 Compliant	51,553
15 Percent Better than Title 24 and Without Reliance on Renewable Energy	47,154
15 Percent Better Than Title 24 and With Reliance on Renewable Energy (Applicant's Commitment)	45,208

Source: ENVIRON, 2009.

Several factors lead to uncertainties in the above analysis. First, the EIA energy use data for electricity end uses relies on values from all climate zones and buildings built in all years. Data for new buildings broken down by climate zone is not yet available from the EIA. It is not clear that plug-in energy use would change substantially with climate zone values; however, the percent of energy represented by plug-in uses will vary with climate zone. To the extent that more energy is used in the built environment in less temperate zones, this may serve to underestimate the plug-in energy use slightly.

Second, the exact design of the nonresidential buildings that would be built on the Project area is unknown. This uncertainty is expected to neither over- nor under-estimate emissions because each nonresidential building will be Title 24 compliant. Title 24 grants enough flexibility that if a designer puts in more windows than is "allowed" under the prescriptive measures, the energy losses can be offset by improving the window quality, or installing a more efficient HVAC system.

Mobile Source Emissions. The mobile source emissions would result from the typical daily operation of motor vehicles by Specific Plan residents. Operational emissions from the new residences that would be provided on the Specific Plan site are considered to be new growth, as residences rarely are removed from

the housing supply once constructed.[41] As the increase of new GHG emissions is caused by population growth, commercial development is not considered new growth for vehicular travel purposes. To the extent that commercial development serves existing residential development, its vehicular travel may not be new. In fact, if the new commercial area serves an area with a high residential/commercial balance, then new commercial growth may *reduce* shopping and work trip lengths, thereby reducing GHG emissions associated with mobile sources. Further, to the extent that new commercial development serves new residential development, much of the commercial vehicle travel already would be counted in the evaluation of the new residential development. If, however, the new commercial area results in longer trips for its workers and residents than they would have previously made, then it adds GHG emissions.

Accordingly, GHG emissions from vehicle miles traveled (VMT) serving commercial areas only should only be counted if the commercial development contributes to greater VMT as a result of its location.[42] If the commercial development lowers VMT, then it should be considered to have a zero or negative GHG contribution as a result of its shortened operational vehicle trips. Here, although the commercial development likely reduces trip lengths from existing residences (and results in a negative GHG contribution), it was conservatively assumed to contribute to a zero net increase in overall United States-wide traffic.

In an effort to include only trips made by residents of the Project area (here, specifically, Newhall Ranch Specific Plan residents), rather than trips associated exclusively with the commercial development, only trips originating or ending at residences that would be built under the previously approved Specific Plan are analyzed. This approach avoids counting trips made by non-residents that visit the Project area to shop; such trips, as discussed above, do not represent true growth because they would have been made in the absence of the population growth accommodated by the Project area. In fact, the existence of the Specific Plan likely will reduce trip lengths as it would provide local shopping and employment opportunities for existing residents of the Santa Clarita Valley.

To assess the validity of using only home-based trips, VMT estimated from traffic model outputs using only the home-based trip method were compared to actual traffic counts for Los Angeles County. The Southern California Association of Governments (SCAG) traffic model covers all of Ventura, Los Angeles, and Orange counties and the western half of San Bernardino and Riverside counties. The VMT, based upon the SCAG computer model for home-based trips, was 6,545 VMT per capita. The SCAG computer model result is consistent with the California Department of Transportation's VMT estimate (5,953 VMT per capita) for the County in 2005.43

---

[41] There are exceptions, such as when one housing development replaces another; in those cases, the replacement residential development need not be considered growth.

[42] Commercial development that could potentially increase VMT would be facilities that draw trips from far away that otherwise would not be made. A theme park, for example, may be viewed as such a development.

[43] *California Motor Vehicle Stock, Travel and Fuel Forecast*, California Department of Transportation, Division of Transportation System Information, available online at http://www.dot.ca.

The traffic study[44] utilized to quantify the mobile source GHG emissions for the proposed Project relied upon a model that is similar to the SCAG model -- the Santa Clarita Valley Consolidated Traffic Model (SCVCTM). The SCVCTM covers a smaller area, is more specific to the Santa Clarita Valley, and was developed by the city of Santa Clarita and the Los Angeles County Department of Public Works.

Results from that traffic study include trip lengths for home-work, home-shop, and home-other[45] of 10.7, 5.2, and 7 miles, respectively. The average home-based trip length was 7.7 miles, which is significantly shorter than trip lengths for the rest of the Santa Clarita Valley,[46] and reflects the inclusion of commercial uses and employment opportunities near the Project site. Trip generation rates also were taken from the referenced traffic study.[47] The distribution of the types of home-based trips provided in the traffic study were used to determine what percentage of trips were for work, shopping, or other. For instance, 29 percent of the home-based trips for the Specific Plan are work trips, 24 percent are shopping trips, and 47 percent are other.

Accordingly, VMT for Specific Plan build-out was calculated by multiplying the trip lengths by the number of trips. Annual VMT for the Specific Plan area at build-out would be approximately 336 million VMT/year. Assuming the Specific Plan site would accommodate 58,860 residents at full build-out, VMT per person per year would be approximately 5,712 miles.[48]

The VMT per capita for the Specific Plan site following build-out (5,712 miles per capita) is less than the VMT per capita for Los Angeles County (5,953 miles per capita). Further, although the methodologies differ slightly, and should be used only for a first order comparison, the Specific Plan VMT is less than the California average, which is 6,548 miles per person per year.

---

gov/hq/tsip/smb/documents/mvstaff/mvstaff05.pdf (last visited February 10, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

[44] *Westside Santa Clarita Valley Roadway Phasing Analysis*, Austin-Foust Associates, Inc. (November 2006). This report is found in **Appendix 8.0** of this EIS/EIR.

[45] Includes trips such as home-school.

[46] Based on the Austin-Foust traffic study relied upon in computing the GHG emissions for the mobile source emissions category, the Santa Clarita Valley (not including Newhall Ranch) has trip lengths for home-work, home-shop, and home-other of 16.6, 10.8, 11.1 miles, respectively. Accordingly, the average home-base trip length is 12.5 miles, nearly five miles longer than the average-home based trip length anticipated for the Specific Plan.

[47] Trip generation rates generally do not consider smart growth principles, unlike trip lengths, which are subject to reduction with the implementation of mass transit, pedestrian friendly facilities, metrolink, *etc.* (Personal communication with Daryl Zerfass, Austin-Foust Associates, Inc., November 27, 2007).

[48] Methodologies for calculating VMT are constantly evolving. The analysis presented above likely over-estimates VMT per capita; a re-analysis with newer more accurate techniques, once available, would provide a more accurate, and likely a lower calculated VMT.

The GHG emissions from mobile sources were then calculated by running URBEMIS 9.2.2 with the trip rates and trip lengths, as provided above. Fleet distribution types from EMFAC2007 from the year 2030 also were used in conjunction with URBEMIS default trip speeds. However, the only GHG for which URBEMIS 9.2.2 calculates emissions is CO_2. Because other GHGs are emitted from mobile sources, the USEPA recommends assuming that CH_4, N_2O, and HFCs account for five percent of mobile source GHG emissions, taking into account their GWPs.[49] Therefore, CO_2 emissions were divided by 0.95 to account for non-CO_2 GHGs. Thus, the total approximate amount of GHGs emitted by mobile sources would be 162,001 tonnes of CO_2e/year. (As noted above, this is likely an overestimate of GHG emissions from mobile sources located on the Specific Plan site following build-out due to the fact that the addition of proximate commercial development in the Project area results in a negative GHG contribution.)

Municipal Emissions. Municipal sources of GHG emissions following Specific Plan build-out would include both the supply and treatment of water and wastewater, public lighting, and municipal vehicles (*e.g.*, police cars and garbage trucks). The bulk of emissions from municipal sources are indirect emissions attributable to energy and electricity use. These sources would result in approximately 18,375 tonnes of CO_2e per year.

Water and Sewage. The majority of GHG emissions from water supply and sewage treatment are attributable to the energy used to convey, treat, and distribute water. Thus, the emissions generally are 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. In general, the water/sewage category is the major source of municipal sector GHG emissions.

Build-out of the Specific Plan would generate a total water demand of 16,400 acre-feet per year (afy). Of the 16,400 afy, 8,100 afy would be potable groundwater pumped from an underlying aquifer and 8,300 afy would be non-potable reclaimed water produced by the Newhall Ranch Water Reclamation Plan (WRP). To supply potable water to residential and nonresidential users, three processes are necessary: (1) supply and conveyance of the water from the source; (2) treatment of the water to make it acceptable for consumption; and (3) distribution of the water to individual users. After use, the wastewater is treated either for disposal or reuse as recycled water. Any recycled water generally is redistributed to users *via* pumping. The annual emissions from water treatment and distribution are approximately 12,789 tonnes of CO_2e, as summarized further below.

- **Potable Groundwater Supply and Conveyance.** To supply the annual demand of potable water, the Specific Plan development would draw upon a local supply of groundwater, through pumping, and distribute the water throughout the development. The Electric Power Research Institute has estimated that, nationwide, the amount of energy required to pump water from the ground ranges

[49] *Emission Facts: Greenhouse Gas Emissions from a Typical Passenger Vehicle*, U.S. Environmental Protection Agency, Office of Transportation and Air Quality, available online at http://www.epa.gov/otaq/climate/420f05004.htm (last visited February 10, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

from 228 to 587 kW-hr per acre foot (AF).[50] Pumping groundwater in Southern California is typically more energy-intensive than in other areas of the state and nation because its aquifers are relatively deep; in Southern California's Chino Basin, which is southeast of the Project area, it has been estimated that 950 kW-hr of electricity are needed to supply one AF of groundwater.[51] To be conservative, it was assumed that it would require 950 kW-hr of electricity to extract one AF of water from the aquifer underlying the Specific Plan site.[52] Using this emission factor, the expected potable water demand and the SCE carbon-intensity factor, supplying and conveying groundwater to areas on the Specific Plan site is estimated to account for 2,333 tonnes of CO_2e emissions per year. Notably, using the Chino Basin estimate most likely has overestimated the municipal CO_2e emissions by approximately 1,000 tonnes per year; a more refined estimate taking into account the actual aquifer depth and the physical properties of the aquifer would lower the estimate of CO_2e emissions from groundwater pumping.

- **Potable Water Treatment and Distribution.** For water intended for indoor use in Southern California, it is estimated that 36 kW-hr of electricity is necessary to treat one AF of water, and an additional 414 kW-hr is necessary to distribute that water to the end users.[53] Based on the Specific Plan's total estimated potable water demand, these emission factors, and the SCE-carbon intensity factor, treating and distributing potable water throughout the Specific Plan area is estimated to

[50] *California's Water-Energy Relationship: Final Staff Report*, California Energy Commission (November 2005), CEC-700-2005-011-SF, page 26. (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

[51] *Ibid*.

[52] *Ibid*. The amount of energy required to supply and convey water depends heavily on how the water is extracted and on the distance between the water source and the end user. At least half of the potable water consumed in Southern California is drawn from surface water in Northern California or nearby states, and supplied via aqueducts. Pumping this water over great distances and sometimes high elevations to the end user can be very energy-intensive. It has been estimated that the average amount of electricity necessary to supply and convey one acre-foot of water suitable for indoor use to Southern California is 3,170 kW/hr, taking into consideration the large portion of water that is imported from hundreds of miles away. Using the SCE carbon-intensity factor, this is equivalent to approximately 2.94 tonnes of CO_2e per million gallons. However, since it is known that the Specific Plan development would use the much less energy-intensive process of pumping groundwater to supply its potable water needs, it is appropriate to use a groundwater specific emission factor and not the generic average emission factor for Southern California.

[53] *Refining Estimates of Water-Related Energy Use in California*, California Energy Commission (December 2006), PIER Final Project Report, prepared by Navigant Consulting, Inc., page 22. (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

account for 89[54] and 1,018 tonnes of CO_2e emissions per year, respectively. (This estimate may double count pumping energy requirements already accounted for in the groundwater pumping analysis because the water may already be at the required pressure to distribute after being pumped from the aquifer.)

- **Wastewater Treatment.** The Newhall Ranch WRP has the capacity to treat 21 AF per day of wastewater and accommodate a maximum flow of 42 AF per day. Emissions associated with wastewater treatment would include indirect emissions necessary to power the treatment process and direct emissions from the organic material in the wastewater.

  The electricity required to operate a wastewater treatment plant in Southern California is estimated to be 623 kW-hr per AF. This is a conservative estimate because it assumes a level of treatment necessary for indoor water (*i.e.*, potable water or water acceptable for household uses such as in toilets); because not all wastewater treated by the Newhall Ranch WRP for use throughout the Specific Plan would be re-used or treated to this level, the actual amount of electricity required will likely be lower. Based on the expected amount of wastewater requiring treatment (approximately 11,008 afy), the emission factor and the SCE carbon-intensity factor, indirect emissions from the electricity necessary to power the wastewater treatment process are estimated to account for 1,945 tonnes of CO_2e per year.

  In order to calculate the direct emissions associated with wastewater treatment, which include emissions of CH_4 and N_2O, a per capita emission factor was developed based on a 2005 U.S. GHG inventory for domestic wastewater treatment (25 teragrams CO_2e/year or 25 million tonnes of CO_2e/year) and the 2005 U.S. population (approximately 296,410,404). Direct emissions from wastewater treatment then were calculated using the emission factor developed from this data (0.084 tonne of CO_2e/capita/year) and the projected population following Specific Plan build-out (58,860 residents). Direct emissions from wastewater treatment are estimated to account for 4,964 tonnes of CO_2e per year.

- **Non-Potable Recycled Water Distribution.** At build-out, the Specific Plan site would need approximately 8,300 afy of non-potable water, which will be provided from recycled water. Once treated at the Newhall Ranch WRP, this water will need to be re-pumped through the development to supply it to end users. Estimates of the amount of energy needed to redistribute and, if necessary, additionally treat recycled water vary from 391 to 978 kW-hr per million gallons. To be conservative, the high-end energy intensity estimate was used in this inventory. Based on the estimated demand for reclaimed water, the estimated electricity demand and the SCE carbon-intensity factor, non-potable reclaimed water redistribution emissions in the Specific Plan area are estimated to account for 2,440 tonnes of CO_2e per year.

[54] Because treatment is likely simply the addition of chlorine tablets, a low value (eight tonnes/year), or the approximate GHG emissions of two single-family homes, is appropriate.

In total, all water and wastewater supply, treatment and distribution activities for the Specific Plan area are expected to produce approximately 12,789 tonnes of CO_2e annually. A summary of the CO_2e emissions generated by the Specific Plan's water demand is provided in **Table 8.0-6** below.

Table 8.0-6
Alternative 2 Estimated Water and Wastewater Emissions For The Specific Plan Site

Water and Wastewater Program	Total CO_2e Emissions (Tonnes of CO_2e per year)
Groundwater Supply and Conveyance (Potable)	2,333
Water Treatment (Potable)	89
Water Distribution (Potable)	1,018
Wastewater Treatment (Indirect Emissions)	1,945
Wastewater Treatment Plant (Direct Emissions)	4,964
Recycled Water Distribution (Non-Potable)	2,440
	Total Emissions: 12,789

Source: ENVIRON, 2009.

Typical sources of imported water for Southern California are from Northern California and the Colorado River.[55] Based on CEC estimates for energy demand, pumping water to Southern California from these typical sources emits approximately 0.96 tonnes of CO_2e/afy of water delivered. If the Specific Plan were to acquire all of its water from these typical sources, the GHG emissions associated with pumping the water would be approximately 7,800 tonnes of CO_2e/year.[56] However, since the Specific Plan site will obtain half of its water from the local underground aquifer and half of its water from the local Newhall Ranch WRP, water will not need to be pumped long distances to the Project site. Therefore, the energy demand, and the GHG emissions, are lower than if the development were to obtain its water from imported sources. The sum of the expected GHG emissions at the Specific Plan site associated with groundwater supply and conveyance (2,333 tonnes of CO_2e/year), potable water distribution (1,018 tonnes of CO_2e/year), and non-potable recycled water distribution (2,440 tonnes of CO_2e/year) is equal to 5,791 tonnes of CO_2e/year. Compared to the emissions estimate for pumping all water from the typical sources (*i.e.,* Northern California and the Colorado River), the estimated emissions savings for water demand at the Specific Plan site is approximately 5,450 tonnes of CO_2e/year.

Public Lighting. GHG emissions from public lighting sources are due to indirect emissions associated with the production of the electricity that powers lights for streets, traffic flow, public lots and parks, and public buildings. Data from a report by the City of Duluth shows that the amount of electricity demanded for all types of public lighting is 149 kW-hr/capita/year. Using this study, the SCE-specific carbon

[55] The CEC estimates that 50 percent of Southern California's water is supplied by importing water from Northern California and the Colorado River.

[56] This estimate is derived by multiplying the emission factor for pumping water to Southern California, 0.96 tonnes of CO_2e/AF, by the total water demand at the Specific Plan site, 16,400 afy.

intensity emission factor, and the expected population of 58,860 upon Specific Plan build-out, it is estimated that public lighting in the Specific Plan area would be responsible for 2,642 tonnes of CO_2e per year.

Municipal Vehicles. GHG emissions from municipal vehicles are due to direct emissions from the burning of fossil fuels. Municipal vehicles considered include police cars, fire trucks, and garbage trucks. Based on data from various sources evaluated (see **Appendix 8.0**), CO_2e emissions from municipal vehicles would be approximately 0.05 tonnes/capita/year. Using this information in conjunction with the Specific Plan's projected population, municipal vehicles would generate 2,943 tonnes of CO_2e per year.

In sum, the overall municipal emissions for the Specific Plan site is approximately 18,375 tonnes of CO_2e.

Golf Course Emissions. Build-out of the Specific Plan would lead to the operation of an 18-hole golf course. Carbon dioxide equivalent emissions were calculated for three operational aspects of the golf course: (1) irrigation; (2) maintenance (*e.g.*, mowing); and (3) on-site building energy use.[57]

Irrigation-Related Emissions. The irrigation-related emissions were quantified following a three-part methodology: (1) identify the source of water; (2) identify the quantity of water needed; and (3) calculate the emissions associated with pumping the water. According to the Specific Plan, the Newhall Ranch WRP would recycle the maximum amount of wastewater generated to meet non-potable needs -- inclusive of parks and recreational area needs. The Specific Plan also specifically states that recycled water will be utilized for irrigation of the golf course. Accordingly, this analysis assumes that the source of all irrigation water needed is the Newhall Ranch WRP. To avoid double counting these irrigation emissions, calculations were based on moving the water from the Newhall Ranch WRP to the golf course.

The quantity of water needed for an 18-hole golf course ranges from 250 to 450 afy. A survey of golf course superintendents conducted in the summer of 2003 by the Northern and Southern California Golf Associations revealed an annual average California usage of 345 afy. Although numerous factors will affect the actual water usage of the golf course, and water usage is likely to vary from year to year, the analysis here assumed an average usage of 345 afy.

When the appropriate emission factor was applied, the total annual emissions from the 18-hole golf course's irrigation demand was estimated to be 73 tonnes of CO_2e.

Maintenance-Related Emissions. The maintenance emissions are associated with the mowing of turf grass. In order to quantify the GHG emissions, a three step methodology was undertaken: (1) identify the area of turf and frequency of mowing; (2) identify the efficiency of the typical mower; and (3) calculate the emissions associated with mowing. With regards to the first step, this analysis assumes that 120 acres of the 180-acre golf course will be mowed twice a week (for 52 weeks per year), with high maintenance areas (such as greens) mowed more frequently. With regards to the second step, a typical mower uses one

[57] The emissions flux resulting from the construction of the golf course is not discussed, nor is the sequestration of carbon dioxide into the turf, trees, and lake associated with the golf course.

tank (18 gallons) of diesel per day; further, given the size specifications of the typical mower and assuming an average speed of five and one-half miles per hour, the typical mower covers 44 acres with one tank. Using this information, the annual maintenance emissions are approximately 52 tonnes of CO_2e.

Building Energy Use-Related Emissions. Literature reports state that the average size of a clubhouse and pro-shop for an 18-hole golf course in California is 11,200 square feet and 1,300 square feet, respectively. For purposes of quantifying the potential GHG emissions associated with these buildings *via* EIA data, the buildings were assigned a "public assembly/recreational building" classification. Accordingly, using the average building sizes, the EIA energy use data and the SCE emission factor, the annual GHG emissions relating to building energy use are 67 tonnes of CO_2e.

In total, the three operational components of the golf course are estimated to result in 192 tonnes of CO_2e.

Area Source Emissions. The area emissions from the Specific Plan site are attributable to hearths (*e.g.*, wood stoves, fireplaces, and natural gas fired stoves) and landscaping fuel combustion sources (*e.g.*, lawn mowers).[58] URBEMIS, Version 9.2.2, and various land use information were used to calculate area source GHG emissions for the Specific Plan site. In total, area sources from the Specific Plan site account for approximately 2,556 tonnes of CO_2e per year.[59]

Because GHG emissions from hearths include natural gas fireplaces, this estimate may be too high. As all natural gas consumed in residential homes was accounted for in the residential section of this analysis, some double counting (overestimation) of emissions occurred in quantifying the GHG emissions from area sources. In addition, wood burning stoves and fireplaces are not allowed in Los Angeles County.

Recreation Center Emissions. Forty recreation centers would be constructed if Specific Plan build-out is facilitated. These centers may include various pools, spas, and restroom buildings. This analysis assumed that pools would be the main consumers of energy in the proposed recreation centers.

The energy used to heat and maintain a swimming pool depends on several factors, including, but not limited to: (1) whether the pool is indoors or outdoors; (2) the size of the pool (surface area and depth); (3) the water temperature; (4) the energy efficiency of the pool pump and water heater; and (5) whether solar heating is used. The analysis here assumed that the pools would be outdoor pools with the dimensions of a typical, competition-size pool (*i.e.*, 50 meters by 22.9 meters). In addition, electricity calculations were based on a pool that ran its standard (not high-efficiency) water filter for 24 hours per day, 365 days per year. The large pool size and standard operating equipment allowed for a conservative (high) energy use estimate that would decrease with a smaller pool or more efficient equipment.

[58] GHG emissions due to natural gas combustion are excluded from this section since they are covered in residential emissions.

[59] Because area sources account for such a small percentage of the overall CO_2 emissions, the contribution of methane and nitrous oxides to overall Project GHG emissions was assumed to be small, and, therefore, was not calculated.

As there is little data publicly available on the energy use of commercial swimming pools, the energy consumption was extrapolated from information obtained from two sources: (1) data on electricity used by pool pumps from Pacific Gas and Electric (PG&E);[60] and (2) data on the annual cost to heat a commercial pool located in Carlsbad, California.[61]

The PG&E study on the energy efficiency of a pool pump at the Lyons Pool in Oakland, California, found an annual electricity use of 110,400 kilowatt hours/year. The PG&E study pool is smaller than the envisioned size of the Specific Plan's pools (actual size of the Lyons Pool is 35 yards by 16 yards), so the electricity use was scaled to reflect the demands of a larger pool. In addition, because the recreation center pools on the Specific Plan area would be heated by solar water heaters, and because solar water heaters can provide up to 100 percent of the heating needs, the analysis for natural gas water heating below incorporated the savings from using solar water heating for pools.

The estimated annual cost of heating a standard competition-size pool is $184,400 (or 72 percent of the total cost of pool operations). The average PG&E commercial rate for natural gas of $0.95/therm was used to convert this cost into annual natural gas use (hundred cubic feet per year [ccf/year]). The commercial rate averages the variable cost due to energy usage and time of year, and corresponds to approximately 184,400 ccf/year.[62] (This value is comparable to that obtained from the pool industry, as the estimated cost of heating a residential pool using a natural gas heater is about one dollar per square foot of water surface area per month in residential therms. Applying this value to a competition-size pool yields an annual natural gas use of 147,600 ccf/year.)

Emission factors were used to calculate the total CO_2e emissions for each pool. Based upon the variables discussed above, the Specific Plan's pools would emit approximately ninety tonnes of CO_2e per 1,000 square feet of surface area per year (eight tonnes from electricity used to pump water and 82 tonnes from natural gas used to heat the pool). However, because the Specific Plan pools would have solar water heating, GHG emissions would be reduced to only eight tonnes per 1,000 square feet per year. Assuming that there will be forty recreation centers, each with one solar heated competition-size pool, the total yearly CO_2e emissions from recreation centers on the Specific Plan site is 4,000 tonnes. Therefore, the solar heating would result in a 40,000 tonnes/year savings, or approximately 90 percent of the emissions associated with traditionally heated pools.

---

60 *Energy Efficient Commercial Pool Program, Preliminary Facility Report, Lyons Pool, City of Oakland/Oakland Unified School District*, Pacific Gas & Electric (October 2006). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

61 *Fueling Change: A Number of Design Schemes and Alternative-Energy Strategies Can Help Operators Beat the Price of Natural Gas*, R. Mendioroz in Athletic Business (March 2006). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

62 At the commercial rate given, one ccf costs one dollar.

8.5.2.1.2 *SCP Direct/Indirect Impacts*

SCP Implementation. In summary, the proposed Project would designate a total of 167.52 acres of spineflower preserves in the Specific Plan area and Entrada planning area. Spineflower occurrences within the VCC planning area, which account for only a very small percentage of the spineflower occurrences on the applicant's land holdings, would not be conserved. (Please see **Subsection 3.4.2.1.2** for additional information regarding Alternative 2's SCP.)

These preserves do not involve any grading or earthwork. Areas within designated spineflower preserves in the Specific Plan area and the Entrada planning area would be undisturbed and preserved in perpetuity. Consequently, no GHGs would be created, and no direct global climate change impacts would result from the SCP. In fact, the SCP's direct impact may be beneficial as it would preserve the carbon sequestration capacity of the dedicated preserve areas.

Specific Plan Area. As a result of SCP approval and implementation, build-out within the Specific Plan area would be enabled. The GHG emissions resulting from Specific Plan build-out is evaluated above in **Subsection 8.5.2.1.1**.

Entrada and VCC Planning Areas. As a result of SCP approval and implementation, build-out of the VCC planning area and a portion of the Entrada planning area also would be enabled. Approval and implementation of the SCP would facilitate completion of the industrial/business park/office complex (totaling approximately 4.2 million square feet) and dedication of 154.3 acres of managed open space on the VCC planning area. In addition, the SCP also would facilitate development of 1,725 residential units, 450,000 square feet of commercial uses, and approximately 138 acres of dedicated and managed open space on a portion of the Entrada planning area. (Please see **Subsection 3.4.2.2** for additional information relating to the build-out facilitated by Alternative 2.) The emissions generated by build-out of these two planning areas are considered below.

Land Use Emissions. As a result of build-out within the VCC and Entrada planning areas, approximately 5,000 and 2,500 new trees would be planted in the VCC and Entrada planning areas, respectively. The additional carbon sequestration capacity generated by these new trees would reduce the net CO_2e emissions from land use change to zero tonnes within the VCC planning area, and approximately 1,570 tonnes of CO_2e within the Entrada planning area.

The methodology utilized to calculate the land use emissions and the assumptions made in that regard are discussed above in **Subsection 8.5.2.1.1**. Please refer to that subsection for further information.

Construction Emissions. As previously discussed, there are three major construction phases for an urban development: demolition; site grading; and building construction. There will not be a demolition phase for build-out of the VCC and Entrada planning areas since the construction would occur on previously undeveloped land presently being utilized for agricultural purposes.

During the grading phase, the total amount of GHG emissions from construction equipment utilized during build-out of the VCC and Entrada planning areas would be a one-time emission of approximately 12,118 and 15,102 tonnes of CO_2e, respectively. The total amount of GHG emissions from the building

construction phase would be a one-time emission of 20,041 tonnes of CO_2e on the VCC planning area and 49,110 tonnes of CO_2e on the Entrada planning area. In sum, the total amount of one-time GHG emissions from construction related activities, including worker commuting during those phases, would be approximately 32,159 tonnes of CO_2e on the VCC planning area and 64,212 tonnes of CO_2e on the Entrada planning area.

The methodology and assumptions relied upon when quantifying the construction emissions affiliated with build-out of the VCC and Entrada planning areas are the same as those utilized when quantifying construction emissions from Specific Plan build-out. Please refer to **Subsection 8.5.2.1.1** for such information.

Residential Emissions. As previously discussed (see **Subsection 8.5.2.1.1**), residential buildings generate GHG emissions as a result of activities requiring electricity and natural gas as energy sources. The amount of energy, and, therefore, the associated GHG emissions emitted per dwelling unit, varies with the type of residential building. The major types of residential buildings that would be located on the Entrada planning area are single-family homes, attached townhomes or condominiums, and apartments. As the VCC planning area would not be developed for residential uses, there are no GHG emissions from residential buildings associated with its build-out.

With standard Title 24 compliance, each single-family home, attached home, and apartment that would be built on the Entrada planning area would emit 4.73, 3.04, and 2.52 tonnes of CO_2e/year, respectively. With 15 percent improvements over Title 24 (2005), a project design feature that Newhall Land has committed to for all residential buildings that are built within the Project area, each single-family home, attached home, and apartment would emit 4.25, 2.76, and 2.28 tonnes of CO_2e/year, respectively.

Newhall Land also may use renewable electricity equivalent to one 2.0 kW photovoltaic (*i.e.*, solar) power system on each single-family detached residence. With 15 percent improvements over Title 24 (2005) and with renewable energy, the dwelling units would emit a total of 4,897 tonnes of CO_2e per year, or 1,145 tonnes less CO_2e than minimally Title 24 compliant dwelling units without renewable energy.

Table 8.0-7, below, provides a comparative assessment of the four residential build-out scenarios evaluated in this inventory, setting forth their respective CO_2e emissions and, if applicable, the percentage of energy savings when compared to the standard Title 24 compliant home.

Table 8.0-7
Alternative 2 Estimated Residential Emissions For The Entrada Planning Area

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)	Percent Saved Over Title 24
Title 24 Compliant	6,042	--
Title 24 Compliant and Renewable Energy	5,482	9%
15 Percent Better than Title 24 and Without Renewable Energy	5,456	10%
15 Percent Better Than Title 24 and With Renewable Energy (Applicant's Commitment)	4,897	19%

Source: ENVIRON, 2009.

For additional information regarding the methodology used and assumptions made when calculating the residential emissions attributable to build-out of the Entrada planning area, please see **Subsection 8.5.2.1.1**; the methodology and assumptions are the same as those used for quantification of the Specific Plan's build-out of residential uses.

Nonresidential Emissions. Nonresidential buildings include all structures, except residences, that may exist in a development, such as government, municipal, commercial, retail, and office space. As previously discussed (see **Subsection 8.5.2.1.1**), the amount of energy, and, therefore, the associated GHG emissions emitted per square foot of available space, varies with the nonresidential building's type of use. The applicant provided data summarizing the nonresidential building categories that would be built within the VCC and Entrada planning areas. The VCC planning area would include business park/industrial nonresidential building types (*i.e.*, office (30 percent); storage (20 percent); research and development (50 percent)). The Entrada planning area would include multiple nonresidential building types: (1) grocery; (2) miscellaneous retail/commercial/office (*i.e.*, restaurant (20 percent); office (25 percent); retail (55 percent)); (3) hotel; (4) public safety (*i.e.*, fire station (100 percent)); and (5) institutional (*i.e.*, schools (75 percent); library (25 percent)).

The applicant has committed to making all new nonresidential buildings 15 percent more energy efficient than what Title 24 (2005) requires, or 15 percent more energy efficient on a TDV basis. Due to the project design feature of reducing energy use 15 percent below that in Title 24, a reduction of over 1,400 tonnes of CO_2e per year would be realized from the nonresidential buildings located on the VCC planning area. With respect to the Entrada planning area, the 15 percent better than Title 24 project design feature would result in more than 400 tonnes of CO_2e emissions reduction.

Newhall Land also may use the renewable energy equivalent of 1,100 and 180 solar power systems for the nonresidential buildings that would be built on the VCC and Entrada planning areas, respectively (*i.e.*, one 2.0 kW system for every 1,600 square feet of nonresidential roof area). This renewable energy would

offset yet another 1,100 tonnes of CO_2e annually for the VCC planning area and approximately 180 tonnes of CO_2e annually for the Entrada planning area.

Overall, these project design features (15 percent better than Title 24 and renewable energy) reduce the nonresidential energy use by 21 percent for the VCC planning area and 12 percent for the Entrada planning area. These measures would bring the overall CO_2e emissions associated with nonresidential energy use down to approximately 9,697 tonnes of CO_2e/year for the VCC planning area, and 4,554 tonnes of CO_2e/year for the Entrada planning area. A comparative summary of the emissions estimation is provided in **Tables 8.0-8** through **8.0-11**.

Table 8.0-8
Alternative 2 Estimated Nonresidential Emissions By Building Type For The VCC Planning Area

Building Type	Title 24 Compliant (Tonnes of CO2e/year)	15 Percent Better Than Title 24 (Tonnes of CO2e/year)
Business Park/Industrial	12,272	10,806

Source: ENVIRON, 2009.

Table 8.0-9
Alternative 2 Estimated Nonresidential Emissions For The VCC Planning Area

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	12,272
15 Percent Better Than Title 24 and Without Reliance on Renewable Energy	10,806
15 Percent Better Than Title 24 and With Reliance on Renewable Energy (Applicant's Commitment)	9,697

Source: ENVIRON, 2009.

Table 8.0-10
Alternative 2 Estimated Nonresidential Emissions By Building Type For The Entrada Planning Area

Building Type	Title 24 Compliant (Tonnes of CO_2e/year)	15 Percent Better Than Title 24 (Tonnes of CO_2e/year)
Grocery	776	741
Miscellaneous Retail/ Commercial/Office	2,448	2,244
Hotel	1,576	1,420
Public Safety	57	47
Institutional (Schools, Libraries, *etc*.)	314	282

Source: ENVIRON, 2009.

Table 8.0-11
Alternative 2 Estimated Nonresidential Emissions For The Entrada Planning Area

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	5,170
15 Percent Better than Title 24 and Without Reliance on Renewable Energy	4,735
15 Percent Better Than Title 24 and With Reliance on Renewable Energy (Applicant's Commitment)	4,554

Source: ENVIRON, 2009.

Please refer to **Subsection 8.5.2.1.1** for detailed information regarding the methodology and assumptions relied upon in quantifying GHG emissions resulting from nonresidential buildings.

Mobile Source Emissions. The mobile source emissions facilitated by SCP approval and implementation would be from the typical daily operation of motor vehicles on the Entrada planning area. Annual VMT for the Entrada planning area would be approximately 28 million VMT/year. Assuming the Entrada planning area would accommodate 4,862 residents at build-out, VMT per person per year would be approximately 5,712 miles.[63] The total approximate amount of GHGs emitted by mobile sources on the Entrada planning area would be 13,380 tonnes of CO_2e/year.

Accordingly, the VMT per capita for the Entrada planning area following build-out (5,712 miles per capita per year) is less than the VMT per capita for Los Angeles County (5,953 miles per capita per year).

[63] Please note that the VMT per capita for build-out of the Specific Plan site and Entrada planning area is the same because the percentage distribution of homes between single-family, attached, and apartment is assumed to be the same for each build-out scenario.

Further, although the methodologies differ slightly and should be used only for a first order comparison, the Entrada planning area VMT is less than the California average (6,548 miles per capita per year).

Notably, the daily operation of motor vehicles considered here does not include the VCC planning area, as this area would only accommodate commercial development and it is not clear that commercial development should be considered new growth for vehicular travel purposes. As previously discussed, GHG emissions from VMT serving commercial areas only should be counted if the commercial areas contribute to greater VMT as a result of its location. If the commercial development lowers VMT because it brings commercial and residential uses into closer proximity (as is the case with the VCC planning area), then it should be considered to have a zero or negative GHG contribution as a result of its shortened operational vehicle trips. Here, although the commercial area accommodated by the VCC planning area likely reduces trip lengths from existing residences (and, therefore, results in a negative GHG contribution), it was conservatively assumed to contribute to a zero net increase in overall United States-wide traffic.

Please see the mobile source emissions discussion in **Subsection 8.5.2.1.1**, which describes the methodology utilized for the mobile source analysis and, in particular, the basis for excluding commercial development from classification as "new" growth for present purposes.

Municipal Emissions. Municipal emissions associated with the development enabled on the VCC and Entrada planning areas were estimated, in general, by scaling the Newhall Ranch municipal emissions by the relative sizes of these developments. Accordingly, the methodology utilized is consistent with the discussion provided in **Subsection 8.5.2.1.1**, above, which was set forth in relation to the municipal source emissions generated by build-out of the Specific Plan site. Where a different methodology was utilized to inventory the municipal emissions projected for build-out of the VCC and Entrada planning areas, the methodology is set forth in detail below.

Water and Sewage. The VCC planning area is expected to generate a total water demand of approximately 1,100 afy, with about 600 afy of potable water from the State Water Project (SWP) and about 500 afy of non-potable water from the Newhall Ranch WRP. The Entrada planning area is expected to generate a total water demand of approximately 2,400 afy, with about 1,700 afy of potable water from the SWP and about 700 afy of non-potable water from the Newhall Ranch WRP. Typical sources of water for Southern California are from Northern California and the Colorado River; based on CEC estimates for energy demand, pumping water to Southern California from these typical sources emits approximately 0.96 tonnes of CO_2e per AF of water delivered.

- **Potable Groundwater Supply and Conveyance.** Supplying and conveying groundwater to the VCC and Entrada planning areas is estimated to account for 582 and 1,647 tonnes of CO_2e emissions per year, respectively.

- **Potable Water Treatment and Distribution.** Treating and distributing potable water in the VCC planning area is estimated to account for 7 and 76 tonnes of CO_2e per year, respectively. Treating and distributing potable water in the Entrada planning area is estimated to account for 19 and 215 tonnes of CO_2e per year, respectively.

- **Wastewater Treatment.** The indirect emissions resulting from the electricity necessary to power the wastewater treatment process for the VCC and Entrada planning areas are 111 and 167 tonnes of CO_2e, respectively. In addition, the wastewater treatment will result in direct emissions due to the release of methane and nitrous oxide. These emissions, which amount to 337 tonnes of CO_2e per year, were quantified for the VCC planning area by scaling the direct emissions facilitated on the Specific Plan area by the ratio of the Specific Plan's total building area to the VCC's total building area. The direct emissions for the Entrada planning area, which amount to 410 tonnes of CO_2e per year, were calculated by applying the appropriate emissions factor to the projected population of the Entrada planning area.

- **Non-Potable Recycled Water Distribution.** In the VCC planning area, 139 tonnes of CO_2e per year would be emitted when distributing the recycled water; in the Entrada planning area, 209 tonnes of CO_2e per year would be emitted.

Public Lighting. Using the Duluth lighting study (referenced above in **Subsection 8.5.2.1.1**), the SCE-specific carbon-intensity emission factor and the expected Entrada population, public lighting emissions were calculated. Emissions from public lighting for the VCC planning area were calculated by scaling the Specific Plan's public lighting emissions by the ratio of total building area in the Specific area to total building area in VCC planning area. Public lighting emissions in the VCC and Entrada planning areas are estimated to account for 180 and 218 tonnes of CO_2e emissions per year, respectively.

Municipal Vehicles. Using various studies and the expected Entrada population, emissions from municipal vehicles in the Entrada planning area were calculated. Emissions from municipal vehicles for the VCC planning area were calculated by scaling the Specific Plan's municipal vehicle emissions by the ratio of total building area in the Specific Plan area to the total building area in the VCC planning area, as described in the previous sections. Municipal vehicle emissions in the VCC and Entrada planning areas are estimated to account for 200 and 243 tonnes of CO_2e emissions per year, respectively.

In sum, the overall municipal emissions for the VCC[64] and Entrada planning areas are approximately 1,632 and 3,128 tonnes of CO_2e, respectively.

Area Source Emissions. The area emission sources considered for the VCC and Entrada planning areas are hearths (*e.g.*, wood stoves, fireplaces, and natural gas fired stoves) and landscaping fuel combustion sources (*e.g.*, lawn mowers). Notably, hearth emissions were not calculated for the VCC planning area as it would only accommodate commercial build-out; there will, however, be emissions associated with landscaping maintenance. In sum, the VCC planning area's area sources would emit 0.5 tonne of CO_2e per year and the Entrada planning area's area sources would emit 387 tonnes of CO_2e per year.

Please see **Subsection 8.5.2.1.1** for additional information (both methodological data and guiding assumptions) regarding the quantification of area source emissions.

[64] Please note that the VCC planning area estimate is conservative because the VCC planning area only accommodates commercial space, which may be less water-intensive than residential space.

Recreation Center Emissions. Approximately two recreation centers would be constructed if build-out in the Entrada planning area is facilitated under Alternative 2. This analysis assumed that pools would be the main consumers of energy in the proposed recreation centers. Because the pools facilitated by Alternative 2 would have solar water heating, the total yearly CO_2e emissions from two recreation centers on the Entrada planning area is 200 tonnes.

Please see **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized in this analysis, including detail concerning the energy savings resulting from Newhall Land's reliance on solar heating for the recreation center pools.

8.5.2.2 Secondary Impacts

Secondary impacts would be attributable to "life cycle" GHG emissions (*i.e.*, GHG emissions from the processes used to manufacture and transport materials used in the infrastructure provided by the RMDP, and development on the Specific Plan site enabled by the proposed Project).[65] The life cycle analysis for the proposed Project considered (1) residential and nonresidential buildings; (2) site infrastructure; and (3) the Newhall Ranch WRP. The overall life cycle emissions from construction materials are estimated to be approximately 4,000 to 27,000 tonnes of CO_2e per year, which represents approximately 1.3 to 8.9 percent of the overall annualized emissions resulting from build-out of the Specific Plan area under Alternative 2. The bulk of these emissions were estimated from general life cycle analysis studies and do not reflect the details of Specific Plan build-out.

Studies that have surveyed the life cycle emissions of buildings estimate that approximately 75 to 97 percent of GHG emissions from buildings are associated with energy usage during the operational phase; the other 3 to 25% 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 1.0 to 8.6 percent of the Project emissions.

The life cycle GHG emissions' analysis for the proposed Project's infrastructure component (*e.g.*, roads, storm drains, utilities, gas, electricity, cable) considered the manufacture and transport of concrete and asphalt only, as other construction materials used in infrastructure have a considerably lower embodied energy. Because the manufacture of concrete has a higher CO_2 emission factor and Newhall Land 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 emissions from embodied energy in infrastructure materials are approximately 0.3 percent of the Project emissions.

[65] Life cycle GHG emissions were not estimated for build-out of the VCC and Entrada planning areas. However, because of the general nature of the life cycle analysis, the relative percentage contribution of embodied energy attributable to the Entrada and VCC planning areas would be comparable to that for the Specific Plan area.

The life cycle GHG emissions for the Newhall Ranch WRP also were calculated based upon the estimated amount of concrete used to construct the WRP. Based on this analysis, the transport of the concrete, which is locally sourced, for the Newhall Ranch WRP leads to a negligible amount (>0.1%) of the Project emissions.

This life cycle GHG emissions estimate is provided for information and comparative purposes only, and is not included in the final inventory, as these emissions would be accounted for under AB 32 in other industry sectors. For instance, the concrete industry is required by law to report emissions and undergo certain early action emission reduction measures under AB 32. Further, although life cycle emissions estimates can provide a broader view of a project's emissions, life cycle analyses often double count emissions that might be attributable to other sectors in a comprehensive analysis.

Notably, in a life cycle emissions analysis for building materials, somewhat arbitrary boundaries must be drawn to define the processes considered in the life cycle analysis.[66] The life cycle emissions field is still relatively new, and while there are general standards for goals and general practices, the specific methodologies and, in particular, the boundaries chosen for the analysis makes inter-comparison of various studies difficult. It has been noted that:

> 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.[67]

Accordingly, the calculations and results presented for the life cycle emissions vary based on input assumptions and assessment boundaries (*e.g.*, how far back to trace the origin of a material). Assumptions made in this analysis generally are conservative. However, due to the open-ended nature of life cycle emissions analysis, the analysis presented is not exact and may be highly uncertain.

[66] For instance, 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, and the energy used to make the machine that made the machine that made the materials.

[67] See *CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*, California Air Pollution Control Officers Association (January 2008), p. 65. (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

8.5.2.3 Impacts In Context

Table 8.0-12, below, summarizes the proposed Project's estimated GHG emissions inventory.

Table 8.0-12
Summary of GHG Emissions For Alternative 2

Source	Units	RMDP	NRSP	Entrada	VCC	Total	Percent of Annual CO_2e Emissions
Vegetation	one time tonnes of CO_2e	9,523	33,895	1,570	0	44,988	NA
Construction (Grading)		24,965	169,297	15,102	12,118	221,481	NA
Construction (Buildings)		NA	266,236	49,110	20,041	335,387	NA
Total (one time emissions)		**34,487**	**469,428**	**65,763**	**32,159**	**601,856**	**NA**
Residential Buildings	tonnes of CO_2e/year	NA	59,286	4,897	NA	64,183	19%
Non-residential		NA	45,208	4,554	9,697	59,460	18%
Mobile		NA	162,001	13,380	NA	175,381	53%
Municipal		NA	18,375	3,128	1,632	23,135	7%
Golf Course		NA	192	NA	NA	192	0.1%
Area Source		NA	2,556	387	0.5	2,944	0.9%
Pools / Recreation		NA	4,000	200	NA	4,200	1.3%
Total (annual emissions)		**0**	**291,618**	**26,546**	**11,330**	**329,494**	**100%**
Total	tonnes of CO_2e/year	**862**	**303,353**	**28,191**	**12,134**	**344,541**	**NA**

8.5.2.3.1 *Comparison with AB 32's 2020 Goal*

As previously discussed, the significance criterion utilized to evaluate the impacts of Alternative 2 on global climate change is whether the proposed Project impedes compliance with AB 32's reduction mandates. The core requirement of AB 32 is that statewide GHG emissions in 2020 be equal to 1990 levels. AB 32 provides CARB with the means (*e.g.*, the Scoping Plan) to adopt and implement emission reduction strategies designed to achieve the 2020 goal. Therefore, irrespective of the voluntary "green" project design features implemented by the Project applicant to ensure that the proposed Project does not interfere with the AB 32 reduction mandate, CARB has and will continue to adopt regulations directed towards achieving the 2020 goal.

CEQA Guidelines section 15144 acknowledges that "[d]rafting an EIR . . . necessarily involves some degree of forecasting. . . . [and] while foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can." In addition, CEQA Guidelines section 15064, subdivision (b), acknowledges that the identification of a significant impact is not always a straightforward task:

> The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. An iron clad definition of significant effect is not always possible because the significance of an activity may vary with the setting.

With this framework in mind, the GHG emissions inventory has been evaluated in order to determine whether or not AB 32 compliance would be impeded.

To preface further discussion of the emissions inventory for Alternative 2, the emissions were estimated assuming that the carbon intensity of the electricity supply system and transportation system will not change in the future. This assumption is conservative, as AB 32 mandates change in both areas -- in fact, in order to achieve AB 32's reduction mandates, it is likely that the state will need to increase renewable and/or non-carbon producing electricity production, establish a low carbon fuel standard, and increase fuel efficiency. In that regard, CARB is actively pursuing a low carbon fuel standard, striving to improve vehicle fuel efficiency via the AB 1493 regulations, and seeking attainment of Governor Schwarzenegger's 33 percent renewable portfolio standard. As more than 90 percent of the carbon footprint of Alternative 2 results from transportation and electricity use, the proposed Project's carbon emissions likely are overestimated, because the state is moving towards securing GHG emission reductions from transportation and electricity via regulations and other efforts, and the proposed Project's emissions will be reduced as such regulations come online.

California-wide GHG emissions in 2004 were 0.480 billion tonnes and 0.427 billion tonnes in 1990. Based on California's 2004 emissions inventory, the state needs to reduce its emissions by 11 percent per capita (*i.e.*, per person) by 2020 to achieve AB 32 goals. Moreover, because the California population is projected to increase by 18 percent by 2020, when compared to 2004 emissions, a per capita decrease of GHG emissions from 13.4 tonnes CO_2e per capita to 10.1 tonnes CO_2e per capita, or 24 percent, would need to be realized to achieve the AB 32 mandated goals. The proposed Project would result in approximately 344,541 tonnes of CO_2e per year, or 5.4 tonnes per capita per year.[68] (This per capita quantity incorporates the one-time direct emissions associated with construction activities and land use/vegetation changes by annualizing the total direct emissions.) On a project-specific basis, the proposed Project's GHG emissions would be lower than the per capita reduction required statewide in order to reduce California's GHG emission levels to 1990 levels by 2020; therefore, the proposed Project would have a less-than-significant impact on global climate change.

[68] Notably, the California per capita CO_2 emissions quantity includes additional carbon producing sectors, such as heavy industry, refining, and transportation of materials, while the per capita CO_2 emissions quantity for the proposed Project does not include these emissions -- these two per capita quantities, therefore, do not represent a straight apples-to-apples comparison. Presumably, the necessary emission reductions needed from activities related to heavy industry, refining, and transportation of materials will be secured via implementation of AB 32 and the reduction measures identified in the Scoping Plan. Relatedly, GHG emission reductions in these industry-related sectors are beyond the control of the Project applicant.

Business-As-Usual Assessment of 2020. The analysis below presents different strategies for comparing some of the proposed Project's emissions sources to business-as-usual (BAU) values for 2020, which is the year by which California must reduce its emissions to 1990 levels under AB 32. Specifically, this section presents a discussion of what constitutes BAU for the proposed Project based upon the four major emission contributors, which comprise over 99% of the annual inventory: (1) residential buildings; (2) nonresidential buildings; (3) mobile sources; and, (4) energy associated with water use.[69]

The proposed Project's residential and nonresidential buildings are 36 percent and 19 percent better than the California average, respectively. As residential emissions contribute more to the proposed Project's emissions than nonresidential emissions, it is clear that these two categories, when take in aggregate, would be more than 24 percent better than the California average. In addition, the proposed Project's mobile and water use-related sources are both at least 24 percent better than California average. As such, the proposed Project's major emission sources (transportation, water, and buildings) are 24 percent better than the California average. This BAU assessment confirms that the proposed Project would have a less-than-significant impact on global climate change under the significance criterion identified for this analysis.

The BAU analysis provided below presents a "worst case," conservative assessment of the proposed Project's BAU assessment. First, the 24 percent reduction from the 2004 greenhouse gas emissions intensity would likely reach beyond the 2020 goal, because the 24 percent reduction does not assume that the fuel mix will be decarbonized, which is likely. Also, in each quantitative analysis presented below, conservative estimates were taken and, as such, the proposed Project's comparative emission reductions are likely understated. (Reference to the ENVIRON technical report, located in **Appendix 8.0**, should be made to obtain additional information on the BAU analysis -- the technical report discusses the analytical methodologies, goals, findings and uncertainties in further detail.)

Residential Intensity Comparison. Using a "baseline-low efficiency" scenario, which assumes that levels of activity would follow current trends in economic and demographic growth but energy efficiency (*e.g.*, Title 24) would remain at current levels, the BAU comparative analysis determined that the average residential unit facilitated by the proposed Project would emit 2.9 tons of CO_2e per year, as compared to 4.2 tons from a residential unit in CEC energy forecast zone 8 or 9; a decrease of 31%. This analysis

[69] Construction and vegetation removal are one-time events, small contributors to the proposed Project's overall emissions inventory, and likely will be subject to greenhouse gas emission reduction standards promulgated pursuant to AB 32; therefore, these emission sources are not addressed in the BAU analysis.

While a comparison of each sector to a BAU goal is presented here, the approach for the assessment varies from sector-to-sector. For residential buildings, the energy usage (electricity and natural gas) per dwelling unit was compared directly with CEC estimates of BAU energy usage for dwelling units in 2020. For nonresidential buildings, the assessment was made by comparing energy-use of buildings built under the 2001 and 2005 standards of Title 24. For water use, representative data from the Irvine Ranch Water District was considered BAU. Although not directly tied to greenhouse gas emission goals, for mobile sources, a CARB benchmark value of 23,000 VMT per dwelling unit was chosen as a "smart growth" suburban goal.

illustrates that the average residential unit enabled by the proposed Project has 38% lower natural gas use and 23% lower electricity use relative to a comparable home in 2020.

The energy use and emissions of the proposed Project's residential units also were compared to the energy use and emissions from the current housing stock in California. The residential units enabled by the proposed Project would use 27 percent less electricity and 33 percent less natural gas than the average California home on a per residential unit basis. In addition, the residential units ultimately produce 36 percent less greenhouse gas emissions than the average 2004 California-wide housing stock on a per residential unit basis; of this percentage, approximately 1/6 is because of the lower energy intensity of SCE, and 5/6 is due to the project design features (*e.g.*, renewable energy commitment and improvement over the 2005 Title 24 standards). Specifically, the carbon dioxide emissions would be approximately 2.8 tonnes per residential unit per year for the proposed Project. For the average California housing stock, emissions are approximately 4.7 tonnes per residential unit per year. As such, the homes that would be facilitated by the proposed Project, per residential unit, emit approximately 1.9 tonnes less CO_2 per year than the average California housing stock. According to this analysis, the proposed Project's residential units would emit 36 percent fewer GHGs than the current housing stock in California, when taking into account the cleaner SCE electricity as compared to the California average.

In summary, the proposed Project's residential units meet AB 32 goals on a per residential unit basis, even without any decrease in the greenhouse gas emissions intensity from energy production, which is likely to occur.

Nonresidential Intensity Comparison. This analysis compares the nonresidential buildings enabled by the proposed Project with the energy use intensity of a Title 24 (2001) compliant nonresidential building. The 2001 Title 24 standards were used to establish the BAU baseline because most buildings that *existed* in 2004 (*i.e.*, the year chosen in this study as the baseline comparison to 2020 goals) were actually *built* before 2001. This approach is conservative (*i.e.*, the baseline for comparison is higher) because most buildings in existence in 2004 were built to earlier, less stringent versions of Title 24.

The results of this analysis show that for the nonresidential building types present at the project site, electricity use intensity is approximately 18 percent lower than the baseline value. Natural gas use is uniformly 22 percent lower than the BAU value for all building types, as it was assumed that all natural gas usage would be covered by Title 24. The nonresidential emissions per square foot would be 19 percent lower than the current California average (in this case, a Title 24 (2001) compliant building).

Mobile Source Intensity Comparison. The BAU analysis for mobile source emissions compares the proposed Project's emissions to: (1) CARB's benchmark value of 23,000 VMT per dwelling unit as a "smart growth" suburban goal, and (2) the average California transportation emissions intensity.

Comparison to CARB Benchmark Value. Each residential unit that would be enabled by the proposed Project would generate 16,099 VMT per year. A study[70] contracted by the California EPA, Air Resources Board Research Division, suggests a "community performance goal" of about 22,000 to 25,000 VMT per household per year for suburban level 3 communities. Additionally, a December 14, 2007 presentation from CARB on land use and local initiatives identifies "smarter growth suburban" communities as having 17,000 to 23,000 VMT per household. The VMT per residential unit per year calculated here is 30 percent below the threshold value of 23,000 VMT per residential unit. The calculated 16,099 VMT per residential unit could therefore be considered to achieve the "community performance goal" and be considered a "smart growth suburb" according to CARB documents.

The 23,000 VMT standard was not scaled up or down to account for future growth or trends in VMT per capita. These adjustments were not made because changes in VMT per capita may be more reflective of people moving into or out of the suburbs rather than changes in peoples' driving habits that already live in the suburbs.

Comparison To The Average Transportation Emissions' Intensity. ENVIRON estimated that California-wide per capita CO_2 emissions from residential vehicles are 3.6 tonnes per capita per year. The California emissions from transportation in 2004, including freight transportation, were 5.4 tonnes per capita per year. Vehicular emissions from the proposed Project are approximately 2.8 tonnes per capita per year, as compared to the California-wide average of 3.6 or 5.4 tonnes per capita per year, if including freight transportation. The calculated per capita vehicular emissions are 24 percent better than the California average.

Importantly, the traffic estimation method for the proposed Project includes only residential vehicles; the estimates also were developed with different methodologies and different underlying assumptions than the California-wide estimates. Therefore, the per capita comparison is approximate. In addition, the emissions per capita were not scaled up or down to account for future growth or trends in VMT per capita for the reasons previously discussed.

Water Use Intensity Comparison. To assess the BAU scenario for the proposed Project's water use-related emissions sources, ENVIRON developed a quantitative estimate of the greenhouse gas emissions from a "typical" Southern California development the same size as the development that would be facilitated by the proposed Project.[71] ENVIRON conservatively assumed that the quantity of water used

[70] See *Transportation-Related Land Use Strategies to Minimize Motor Vehicle Emissions: An Indirect Source Research Study*, California Environmental Protection Agency, Air Resources Board Research Division, available online at http://www.arb.ca.gov/research/apr/past/92-348a.pdf (last visited February 11, 2009). (This document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

[71] Although the direct emissions from wastewater treatment were included in the overall emissions inventory for the proposed Project, they are not included in this comparison of emissions. Direct emissions are not included because wastewater emissions may be more of a function of the amount of biological matter in the wastewater than a function of the amount of wastewater generated.

by the proposed Project would be equal to BAU water usage, but compared the *source* of the water to a Southern California Standard - the Irvine Ranch Water District (IRWD). The IRWD was chosen as a comparison for this analysis because: (1) the Project applicant used IRWD data as a baseline to calculate its water demand; (2) IRWD has detailed disaggregated water-usage information available;[72] and, (3) IRWD has been recognized as a leader in both water conservation and water reuse.

The final comparison between the proposed Project and the IRWD BAU scenario shows a water demand total of 19,909 afy for the proposed Project and IRWD BAU scenario, and total calculated CO_2e for the proposed Project and IRDW BAU scenario to be 7,825 and 12,312 tonnes per year, respectively. This analysis suggests that the proposed Project's water use-related emissions are 36 percent lower than the BAU scenario. This large decrease in the amount of emissions is attributable to two main project design features of the proposed Project: (1) a large percentage of water would come from recycled water; and, (2) the proposed Project, particularly the development that would be facilitated in the Specific Plan area, relies more heavily upon local groundwater supplies, as compared to water from the SWP.

Executive Order S-03-05 2050 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." (*Climate Change Proposed Scoping Plan: A Framework For Change*, California Air Resources Board (October 2008), p. ES-2; italics added.)
>
> "[T]he measures needed to meet the 2050 goal are too far in the future to define in detail . . ." (*Ibid.*)

[72] Because of the detailed data available from IRWD, ENVIRON was able to account for the specific water use demands of commercial and residential, while taking into account the lack of large agriculture and heavy industry demands at the project site.

The CEC and CARB also have published an alternative fuels plan that identifies[73] "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: [74]

> 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.
>
> 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.

---

[73] 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 document is available for public inspection and review at the County of Los Angeles Public Library, Valencia Branch, 23743 West Valencia Boulevard, Santa Clarita, California 91355-2191, and is incorporated by reference.)

[74] *Id*. at pp. 67-68.

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.

The majority of the measures identified by the CEC/CARB above relate to technology improvements beyond both the control of the Project applicant and the scope of the proposed Project. In fact, the extent to which the proposed Project's mobile source emissions will change in the future depends on the quantity (*e.g.*, number of vehicles, average daily mileage) and quality (*i.e.*, carbon content) of fuel that will be available and required to meet both regulatory standards and residents' needs. As discussed above, renewable power requirements, the low carbon fuel standard, and vehicle emissions standards will all decrease GHG emissions per unit of energy delivered or per vehicle mile traveled.

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 Cal. Code Regs., tit. 14, § 15145.)

Comparison with State, National, and Global GHG Emissions. The emissions from the proposed Project at build-out have been compared to state, national and global emissions to put the emissions from the proposed Project in context. In 2004, global emissions were 26.8 billion tonnes of CO_2e per year; national emissions were about 7 billion tonnes of CO_2e; and, statewide emissions were about 0.480 billion tonnes of CO_2e. The proposed Project's emissions would be approximately 0.0013% of global emissions, 0.0049% of national emissions, and 0.072% of statewide emissions.

The above analysis is not intended to suggest that the proposed Project's emissions are *de minimis*; instead, it is provided for overall context. In general, the combined emissions of projects globally appear to be the primary cause of global climate change, even though many project-specific emissions appear small when viewed in isolation.

8.5.3 Impacts of Alternative 3 (Elimination of Planned Potrero Bridge and Additional Spineflower Preserves)

8.5.3.1 Direct\Indirect Impacts

8.5.3.1.1 *RMDP Direct/Indirect Impacts*

RMDP Installation. Under Alternative 3, infrastructure would be constructed in and adjacent to the Santa Clara River and tributary drainages within the Project area; however, the RMDP infrastructure proposed under Alternative 3 is comprised of different configurations than that proposed under Alternative 2. (Alternative 3's RMDP infrastructure is described in detail in **Subsection 3.4.3.1.1** of the EIS/EIR.) In order to install Alternative 3's RMDP infrastructure component, the one-time emission of

33,136 tonnes of CO_2e resulting from land use changes and construction-related activities would be required.

Land Use Emissions. The removal of existing vegetation on the RMDP study area, in order to accommodate installation of the RMDP infrastructure components, would result in GHG emissions by reducing the existing carbon sequestration capacity of the Project area. Specifically, the loss of existing vegetation resulting from the clearing required for implementation of the Alternative 3 RMDP infrastructure would result in the one-time emission of 9,162 tonnes of CO_2e.

Construction Emissions. GHG emissions would result from the implementation of the RMDP infrastructure as various construction-related activities would be required to install the bridges, buried bank stabilization, *etc*. The construction emissions resulting from installation of the Alternative 3 RMDP infrastructure would occur on a one-time basis, and are limited to a finite period of time. The total number of one-time GHG emissions attributable to construction-related activities required for installation of the RMDP infrastructure would be 23,974 tonnes of CO_2e.

Specific Plan Area. Under Alternative 3, the proposed RMDP infrastructure improvements would facilitate partial build-out of the previously approved Specific Plan. Specifically, under Alternative 3, implementation of the RMDP would indirectly facilitate build-out of 20,433 residential units and 5,483 thousand square feet of commercial uses, along with the dedication and management of a total of 9,753 acres of open space. (Please refer to **Subsection 3.4.3.2** for additional information regarding the development enabled by Alternative 3.) The build-out of the Specific Plan area would indirectly result in GHG emissions, as summarized below.

Land Use Emissions. The removal of existing vegetation on the Specific Plan site in order to accommodate the previously approved Specific Plan land uses would contribute to net GHG increases by reducing the existing carbon sequestration capacity of the Specific Plan site. Notably, after completion of Specific Plan build-out, many privately owned areas would be re-vegetated with trees, shrubs, and other vegetation.[75] The additional carbon sequestration provided by the new trees would reduce the net CO_2e emissions from land use change to approximately 33,317 tonnes. (Please refer to the discussion of land use change emissions in **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized to calculate the emissions quantified above.)

Construction Emissions. As previously discussed (see **Subsection 8.5.2.1.1**), build-out of the previously approved Specific Plan land uses would result in construction emissions associated with grading and building construction. Under Alternative 3, the total amount of GHG emissions from grading construction equipment utilized during partial build-out of the Specific Plan site would be a one-time emission of approximately 165,840 tonnes of CO_2e. The total amount of GHG emissions from the building

[75] Alternative 3 would result in the revegetation of the Project area with a fewer number of trees than Alternative 2 as less development would be enabled, thereby reducing the amount of cleared land (when compared to the proposed Project). The emissions estimates were scaled in accordance with the total squire footage of building area for Alternatives 3 through 7 to reflect the incremental reductions in development.

construction phase for Specific Plan development would be a one-time emission of 260,800 tonnes of CO_2e. In sum, the total amount of GHG emissions from construction-related activities occurring during partial build-out of the previously approved Specific Plan, including worker commuting during those phases, would be approximately 426,640 tonnes of CO_2e under Alternative 3.

Residential Emissions. The major types of residential buildings that would be located on the Specific Plan site following partial build-out of the Specific Plan include single-family homes, attached townhomes or condominiums, and apartments. As previously discussed (see **Subsection 8.5.2.1.1**), Newhall Land has committed to making all residential buildings on the Specific Plan site 15 percent better than what is required by Title 24 (2005). This commitment will reduce the electricity and natural gas use of all residential buildings facilitated by Alternative 3.

The applicant also may use renewable electricity equivalent to one 2.0 kW photovoltaic (*i.e.*, solar) system on each single-family detached residence. With 15 percent improvements over Title 24 (2005) and renewable energy, the dwelling units would emit a total of 58,003 tonnes of CO_2e per year, or 13,565 tonnes less CO_2e than minimally Title 24 compliant dwelling units without renewable energy.

Table 8.0-13, below, provides a comparative assessment of the four residential build-out scenarios evaluated in this inventory, setting forth their respective CO_2e emissions.

Table 8.0-13
Alternative 3 Estimated Residential Emissions For the Specific Plan Site

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	71,568
Title 24 Compliant and Renewable Energy	64,939
15 Percent Better Than Title 24 and Without Renewable Energy	64,632
15 Percent Better Than Title 24 and With Renewable Energy (Applicant's Commitment)	58,003

Source: ENVIRON, 2009.

(For additional information regarding the methodology utilized to quantify the residential emissions, and the assumptions and uncertainties associated with the calculation, please see the discussion of residential emissions in **Subsection 8.5.2.1.1**.)

Nonresidential Emissions. The types of nonresidential buildings that would be built on the Specific Plan site following approval and implementation of Alternative 3 would be identical to those enabled under Alternative 2 (the proposed Project). (Please see **Subsection 8.5.2.1.1** for additional information.)

Newhall Land has committed to making all new nonresidential buildings 15 percent more energy efficient than what Title 24 (2005) requires, or 15 percent more energy efficient on a TDV basis. Due to the project design feature of reducing energy use 15 percent below that in Title 24, a reduction of over 4,341 tonnes of CO_2e per year would be realized from the nonresidential buildings.

The applicant also may install one 2.0 kW photovoltaic power system on every 1,600 square feet on nonresidential roof area within the Specific Plan site. This renewable energy would offset yet another 1,924 tonnes of CO_2e annually.

Overall, these project design features (15 percent better than Title 24 and renewable energy) reduce Alternative 3's nonresidential energy use by 12 percent. These measures would bring the overall CO_2e emissions associated with nonresidential energy use down to approximately 44,602 tonnes of CO_2e/year. A comparative summary of the emissions inventory results is provided in **Tables 8.0-14** and **8.0-15**.

Table 8.0-14
Alternative 3 Estimated Nonresidential Emissions By Building Type For The Specific Plan Site

Building Type	Title 24 Compliant (Tonnes of CO_2e/year)	15 Percent Better Than Title 24 (Tonnes of CO_2e/year)
Grocery	3,104	2,963
Miscellaneous Retail/ Commercial/Office	40,140	36,806
Hotel	788	710
Business Park/Industrial	3,857	3,396
Public Safety	359	300
Institutional (Schools, Libraries, *etc*.)	2,620	2,350

Source: ENVIRON, 2009.

Table 8.0-15
Alternative 3 Estimated Nonresidential Emissions For The Specific Plan Site

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e /year)
Title 24 Compliant	50,867
15 Percent Better Than Title 24 and Without Reliance on Renewable Energy	46,526
15 Percent Better Than Title 24 and With Reliance on Renewable Energy (Applicant's Commitment)	44,602

Source: ENVIRON, 2009.

(For additional information regarding the methodology utilized to quantify the emissions resulting from the nonresidential buildings that Alternative 3 would facilitate, and the uncertainties and assumptions associated with the calculations, please refer to **Subsection 8.5.2.1.1**.)

Mobile Source Emissions. Alternative 3's mobile source emissions would result from the typical daily operation of motor vehicles by Specific Plan residents. The total approximate amount of GHGs emitted by mobile sources would be 158,495 tonnes of CO_2e/year. (Please refer to **Subsection 8.5.2.1.1** for additional information relating to the mobile source emissions methodology.)

Municipal Emissions. Municipal sources of GHG emissions following Specific Plan build-out under Alternative 3 would include both the supply and treatment of water and wastewater, public lighting, and municipal vehicles (*e.g.*, police cars and garbage trucks). These emissions would result in approximately 17,999 tonnes of CO_2e per year. (For additional information relating to the methodology relied upon when calculating Alternative 3's municipal source emissions, please refer to **Subsection 8.5.2.1.1**.)

Golf Course Emissions. Build-out of the Specific Plan under Alternative 3 would lead to the operation of an 18-hole golf course. Carbon dioxide emissions were calculated for three operational aspects of the golf course: (1) irrigation; (2) maintenance (*e.g.*, mowing); and (3) on-site building energy use. In total, the three operational components of the golf course are estimated to result in 192 tonnes of CO_2e. **(Subsection 8.5.2.1.1**, above, contains additional information relating to the methodology and formula used to quantify the emissions associated with operation of the Specific Plan's golf course.)

Area Source Emissions. The area emissions from the Specific Plan site are attributed to hearths and landscaping fuel combustion sources. In total, area sources from the Specific Plan site account for approximately 2,503 tonnes of CO_2e per year under Alternative 3. (Please see **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized in this analysis to quantify area source emissions.)

Recreation Center Emissions. Approximately thirty-nine recreation centers would be constructed if Specific Plan build-out is facilitated under Alternative 3. This analysis assumed that pools would be the main consumers of energy in the proposed recreation centers. Because the Specific Plan pools facilitated by Alternative 3 would have solar water heating, the total yearly CO_2e emissions from 39 recreation centers on the Specific Plan site is 3,918 tonnes. (Please see **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized in this analysis, including detail concerning the energy savings resulting from Newhall Land's reliance on solar heating for the recreation center pools.)

8.5.3.1.2 *SCP Direct/Indirect Impacts*

SCP Implementation. Alternative 3 would designate a total of 228.61 acres of spineflower preserves in the Specific Plan area and Entrada planning area. Spineflower occurrences within the VCC planning area, which do not account for a substantial percentage of the spineflower occurrences on the applicant's land holdings, would not be conserved, similar to the proposed Project (Alternative 2). (Please see **Subsection 3.4.3.1.2** for additional information regarding Alternative 3's SCP.)

These preserves do not involve any grading or earthwork. Areas within designated spineflower preserves in the Specific Plan area and the Entrada planning area would be undisturbed and preserved in perpetuity. Consequently, no GHGs would be created, and no direct global climate change impacts would result from the SCP. In fact, the SCP's direct impact may be beneficial as it will preserve the carbon sequestration capacity of the dedicated preserves.

Specific Plan Area. As a result of Alternative 3's SCP approval and implementation, partial build-out within the Specific Plan area would be facilitated. The GHG emissions resulting from Specific Plan build-out is evaluated above in **Subsection 8.5.3.1.1**.

Entrada and VCC Planning Areas. As a result of approval and implementation of Alternative 3's SCP, build-out of the VCC planning area and partial build-out a portion of the Entrada planning area also would be facilitated. Like the proposed Project, approval and implementation of Alternative 3's SCP would facilitate completion of the industrial/business park/office complex (totaling approximately 4.2 million square feet) and dedication of 154.3 acres of managed open space on the VCC planning area. In addition, the SCP also would facilitate development of 1,125 residential units, 450,000 square feet of commercial uses, and approximately 191.5 acres of dedicated and managed open space on a portion of the Entrada planning area. The amount of enabled development on the Entrada planning area for Alternative 3 is reduced slightly when compared to the proposed Project (Alternative 2). (Please see **Subsection 3.4.3.2** for additional information relating to the build-out facilitated by Alternative 3.) The emissions generated by build-out of these two planning areas are considered below.

Land Use Emissions. The removal of existing vegetation on the VCC and Entrada planning areas in order to accommodate the build-out facilitated by the SCP would contribute to net GHG increases by reducing existing carbon sequestration capacity. However, after completion of build-out within these two planning areas, many privately owned areas would be re-vegetated with trees, shrubs, and other vegetation. The additional carbon sequestration capacity provided by the new vegetation would reduce the net CO_2e emissions from land use change under Alternative 3 to zero tonnes within the VCC planning area, and approximately 1,257 tonnes of CO_2e within the Entrada planning area. (The methodology utilized to calculate the land use emissions and the assumptions made in that regard are discussed above in **Subsection 8.5.2.1.1**. Please refer to that subsection for further information.)

Construction Emissions. As previously discussed, the major construction phases for build-out of the VCC and Entrada planning areas relate to site grading and building construction. During the site grading phase, the total amount of GHG emissions from grading construction equipment utilized during build-out of the VCC and Entrada planning areas would be a one-time emission of approximately 12,118 and 10,543 tonnes of CO_2e, respectively. The total amount of GHG emissions from the building construction phase would be a one-time emission of 20,041 tonnes of CO_2e on the VCC planning area and 34,285 tonnes of CO_2e on the Entrada planning area. In sum, the total amount of one-time GHG emissions from construction related activities under Alternative 3, including worker commuting during those phases, would be approximately 32,159 tonnes of CO_2e on the VCC planning area and 44,828 tonnes of CO_2e on the Entrada planning area. (The methodology and assumptions relied upon when quantifying the construction emissions affiliated with build-out of the VCC and Entrada planning areas are the same as those utilized when quantifying construction emissions from Specific Plan build-out. Please refer to **Subsection 8.5.2.1.1** for such information.)

Residential Emissions. As previously discussed (see **Subsection 8.5.2.1.1**), residential buildings generate GHG emissions as a result of activities requiring electricity and natural gas as energy sources. The major types of residential buildings that would be located on the Entrada planning area are single-family homes, attached townhomes or condominiums, and apartments. As the VCC planning area would not be developed for residential uses, there are no GHG emissions from residential buildings associated with its build-out.

Newhall Land has committed to making all residential buildings on the Entrada planning area 15 percent better than what is required by Title 24 (2005). This commitment will reduce the electricity and natural gas use of all residential buildings facilitated by Alternative 3. The applicant also may use renewable electricity equivalent to one 2.0 kW photovoltaic (*i.e.*, solar) system on each single-family detached residence. With 15 percent improvements over Title 24 and with renewable energy, the dwelling units would emit a total of 3,194 tonnes of CO_2e per year; this is 746 tonnes less CO_2e than minimally Title 24 compliant dwelling units without renewable energy.

Table 8.0-16, below, provides a comparative assessment of the four residential build-out scenarios evaluated in Alternative 3's inventory, setting forth their respective CO_2e emissions.

Table 8.0-16
Alternative 3 Estimated Residential Emissions For the Entrada Planning Area

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	3,940
Title 24 Compliant and Renewable Energy	3,575
15 Percent Better Than Title 24 and Without Renewable Energy	3,559
15 Percent Better Than Title 24 and With Renewable Energy (Applicant's Commitment)	3,194

Source: ENVIRON, 2009.

(For additional information regarding the methodology used and assumptions made when calculating the residential emissions attributable to build-out of the Entrada planning area, please see **Subsection 8.5.2.1.1**; the methodology and assumptions are the same as those used for quantification of the Specific Plan's build-out of residential uses.)

Nonresidential Emissions. The types of nonresidential buildings that would be facilitated under Alternative 3 are identical to those facilitated by the proposed Project (Alternative 2). (Please see **Subsection 8.5.2.1.1** for additional information regarding the breakdown of nonresidential building types that Alternative 3 would enable for build-out on the VCC and Entrada planning areas.)

As previously discussed, the applicant has committed to making all new nonresidential buildings 15 percent more energy efficient than what Title 24 (2005) requires, or 15 percent more energy efficient on a TDV basis. Due to the project design feature of reducing energy use 15 percent below that in Title 24, a reduction of over 1,466 tonnes of CO_2e per year would be realized from the nonresidential buildings located on the VCC planning area. With respect to the Entrada planning area, the 15 percent better than Title 24 project design feature would result in a 435 tonnes of CO_2e emission reduction.

Newhall Land also may install one 2.0 kW photovoltaic power system on every 1,600 square feet of nonresidential roof area within the VCC and Entrada planning areas. This renewable energy would offset

yet another 1,109 tonnes of CO_2e annually for the VCC planning area and approximately 181 tonnes of CO_2e annually for the Entrada planning area.

Overall, these project design features (15 percent better than Title 24 and renewable energy) reduce the nonresidential energy use by 21 percent for the VCC planning area and 12 percent for the Entrada planning area. These measures would bring the overall CO_2e emissions associated with Alternative 3's nonresidential buildings down to approximately 9,697 tonnes of CO_2e/year for the VCC planning area, and 4,544 tonnes of CO_2e/year for the Entrada planning area.

A comparative summary of the emissions inventory results is provided in **Tables 8.0-17** through **8.0-20**.

Table 8.0-17
Alternative 3 Estimated Nonresidential Emissions By Building Type For The VCC Planning Area

Building Type	Title 24 Compliant (Tonnes of CO_2e/year)	15 Percent Better Than Title 24 (Tonnes of CO_2e/year)
Business Park/Industrial	12,272	10,806

Source: ENVIRON, 2009.

Table 8.0-18
Alternative 3 Estimated Nonresidential Emissions For The VCC Planning Area

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	12,272
15 Percent Better Than Title 24 and Without Reliance on Renewable Energy	10,806
15 Percent Better Than Title 24 and With Reliance on Renewable Energy (Applicant's Commitment)	9,697

Source: ENVIRON, 2009.

Table 8.0-19
Alternative 3 Estimated Nonresidential Emissions By Building Type For The Entrada Planning Area

Building Type	Title 24 Compliant (Tonnes of CO_2e/year)	15 Percent Better Than Title 24 (Tonnes of CO_2e/year)
Grocery	776	741
Miscellaneous Retail/ Commercial/Office	2,448	2,244
Hotel	1,576	1,420
Public Safety	57	47
Institutional (Schools, Libraries, *etc*.)	314	282

Source: ENVIRON, 2009.

Table 8.0-20
Alternative 3 Estimated Nonresidential Emissions For The Entrada Planning Area

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	5,170
15 Percent Better Than Title 24 and Without Reliance on Renewable Energy	4,735
15 Percent Better Than Title 24 and With Reliance on Renewable Energy (Applicant's Commitment)	4,554

Source: ENVIRON, 2009.

(Please refer to **Subsection 8.5.2.1.1** for detailed information regarding the methodology and assumptions relied upon in quantifying GHG emissions resulting from nonresidential buildings.)

Mobile Source Emissions. The mobile source emissions facilitated by approval and implementation of Alternative 3's SCP would be from the typical daily operation of motor vehicles by residents of the Entrada planning area. The total approximate amount of GHGs emitted by mobile sources on the Entrada planning area would be 8,726 tonnes of CO_2e/year. (Please see the mobile source emissions discussion in **Subsection 8.5.2.1.1**, which describes the methodology utilized for the mobile source analysis and, in particular, the basis for excluding the commercial development enabled on the VCC planning area from classification as "new" growth for purposes of quantifying mobile source emissions.)

Municipal Emissions. The overall municipal emissions (*i.e.*, water; public lighting; municipal vehicles) for the VCC and Entrada planning areas under Alternative 3 are approximately 1,632 and 2,184 tonnes of CO_2e, respectively. (Please see **Subsection 8.5.2.1.1** for additional information regarding the quantification of municipal source emissions.)

Area Source Emissions. Upon build-out of the VCC planning area under Alternative 3, 0.5 tonne of CO_2e per year would be emitted from the landscaping activities. As for the partial build-out of the Entrada planning area enabled by Alternative 3, 252 tonnes of CO_2e per year would be emitted from hearths landscaping maintenance activities. (Please see **Subsection 8.5.2.1.1** for additional information (both methodological data and guiding assumptions) regarding the quantification of area source emissions.)

Recreation Center Emissions. Approximately two recreation centers would be constructed if Entrada planning area build-out is facilitated under Alternative 3. This analysis assumed that pools would be the main consumers of energy in the proposed recreation centers. Because the pools facilitated by Alternative 3 would have solar water heating, the total yearly CO_2e emissions from two recreation centers on the Entrada planning area is 200 tonnes. (Please see **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized in this analysis, including detail concerning the energy savings resulting from Newhall Land's reliance on solar heating for the recreation center pools.)

8.5.3.2 Secondary Impacts

A life cycle emissions estimate was provided above (see **Subsection 8.5.2.2**) in relation to the proposed Project for informational purposes only, as the scientific and methodological basis for calculating life cycle emissions is highly uncertain. As this alternative would provide less infrastructure and development than the proposed Project, the life cycle emissions for this alternative are of a lesser quantity than those identified above.

8.5.3.3 Impacts in Context

Table 8.0-21, below, summarizes Alternative 3's estimated emissions.

Table 8.0-21
Summary of GHG Emissions For Alternative 3

Source	Units	RMDP	NRSP	Entrada	VCC	Total	Percent of Annual CO_2e Emissions
Vegetation	one time tonnes of CO_2e	9,162	33,317	1,257	0	43,737	NA
Construction (Grading)		23,974	165,840	10,543	12,118	212,474	NA
Construction (Buildings)		NA	260,800	34,285	20,041	315,126	NA
Total (one time emissions)		**33,136**	**459,957**	**46,085**	**32,159**	**571,337**	**NA**
Residential Buildings	tonnes of CO_2e/year	NA	58,003	3,194	NA	61,196	19%
Non-residential		NA	44,602	4,554	9,697	58,854	19%
Mobile		NA	158,495	8,726	NA	167,221	53%
Municipal		NA	17,999	2,184	1,632	21,816	7%
Golf Course		NA	192	NA	NA	192	0.1%
Area Source		NA	2,503	252	0.5	2,755	0.9%
Pools / Recreation		NA	3,918	200	NA	4,118	1.3%
Total (annual emissions)		**0**	**285,712**	**19,110**	**11,330**	**316,152**	**100%**
Total	tonnes of CO_2e/year	**828**	**297,211**	**20,262**	**12,134**	**330,436**	**NA**

These emissions were estimated assuming that the carbon intensity of the electricity supply system and transportation system do not change in the future. This assumption is conservative, as AB 32 mandates change in both areas. Accordingly, the Alternative 3 GHG inventory presented above presents the worst-case scenario. (Please see **Subsection 8.5.2.3** for additional information regarding the scope of the change mandated by AB 32, and the likely GHG reductions in the electricity and fuel sectors.)

As discussed above (see **Subsection 8.5.2.3**), Alternative 2 would not impede California's achievement of AB 32 compliance. This conclusion was reached after evaluating the per capita emissions of the average California resident and the residents of the Specific Plan area and VCC and Entrada planning areas, and assessing the proposed Project under a BAU scenario. Because the development that would be enabled in these areas is energy efficient and promotes sustainable development principles, the impact of the proposed Project was found to be less than significant. This same conclusion applies to Alternative 3, as the GHG emissions inventory for Alternative 3 is less than that for Alternative 2, and Alternative 3 employs all of the same sustainable development principles as the proposed Project.

8.5.4 Impacts of Alternative 4 (Elimination of Planned Potrero Bridge and Addition of VCC Spineflower Preserve)

8.5.4.1 Direct\Indirect Impacts

8.5.4.1.1 *RMDP Direct/Indirect Impacts*

RMDP Installation. Under Alternative 4, infrastructure would be constructed in and adjacent to the Santa Clara River and tributary drainages within the Project area; however, the RMDP infrastructure proposed under Alternative 4 is comprised of different configurations than that proposed under Alternative 2. (Alternative 4's RMDP infrastructure is described in detail in **Subsection 3.4.4.1.1** of the EIS/EIR.) In order to install Alternative 4's RMDP infrastructure component, the one-time emission of 31,506 tonnes of CO_2e resulting from land use changes and construction-related activities would occur.

Land Use Emissions. The removal of existing vegetation on the RMDP study area, in order to accommodate installation of the RMDP infrastructure components, would result in GHG emissions by reducing the existing carbon sequestration capacity of the Project area. That is, by removing vegetation that currently reduces CO_2e levels, existing GHG emission levels would increase. Specifically, the loss of existing vegetation resulting from the clearing required for installation of the Alternative 4 RMDP infrastructure would result in the one-time emission of 8,734 tonnes of CO_2e.

Construction Emissions. GHG emissions also would result from the installation of the RMDP infrastructure as various construction-related activities would be required to install the bridges, buried bank stabilization, *etc*. The construction emissions resulting from installation of the Alternative 4 RMDP infrastructure would occur on a one-time basis, and are limited to a finite period of time. The total quantity of one-time GHG emissions attributable to construction-related activities required for installation of the RMDP infrastructure would be 22,772 tonnes of CO_2e.

Specific Plan Area. Under Alternative 4, the proposed RMDP infrastructure improvements would facilitate partial build-out of the previously approved Specific Plan. Specifically, under Alternative 4, implementation of the RMDP would indirectly facilitate build-out of 20,721 residential units and 5,483 thousand square feet of commercial uses, along with the dedication and management of a total of 9,921 acres of open space. (Please refer to **Subsection 3.4.4.2** for additional information regarding the development enabled by Alternative 4.) The build-out of the Specific Plan area would indirectly result in GHG emissions, as summarized below.

Land Use Emissions. The removal of existing vegetation on the Specific Plan site in order to accommodate the previously approved Specific Plan land uses would contribute to net GHG increases by reducing the existing carbon sequestration capacity of the Specific Plan site. Notably, after completion of Specific Plan build-out, many privately owned areas would be re-vegetated with trees, shrubs, and other vegetation. The additional carbon sequestration provided by the new trees would reduce the net CO_2e emissions from land use change to approximately 33,540 tonnes. (Please refer to the discussion of land use change emissions in **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized to calculate the emissions quantified above.)

Construction Emissions. As previously discussed (see **Subsection 8.5.2.1.1**), build-out of the previously approved Specific Plan land uses would result in construction emissions associated with grading and building construction. Under Alternative 4, the total amount of GHG emissions from grading construction equipment utilized during build-out would be a one-time emission of approximately 167,962 tonnes of CO_2e. The total amount of GHG emissions from the building construction phase for Specific Plan development would be a one-time emission of 264,137 tonnes of CO_2e. In sum, the total amount of GHG emissions from construction-related activities occurring during partial build-out of the previously approved Specific Plan, including worker commuting during those phases, would be approximately 432,009 tonnes of CO_2e under Alternative 4.

Residential Emissions. The major types of residential buildings that would be located on the Specific Plan site following partial build-out of the Specific Plan include single-family homes, attached townhomes or condominiums, and apartments. As previously discussed (see **Subsection 8.5.2.1.1**), Newhall Land has committed to making all residential buildings on the Specific Plan site 15 percent better than what is required by Title 24 (2005). This commitment will reduce the electricity and natural gas use of all residential buildings facilitated by Alternative 4. The applicant also may use renewable electricity equivalent to one 2.0 kW photovoltaic (*i.e.*, solar) system on each single-family detached residence. With 15 percent improvements over Title 24 and renewable energy, the dwelling units would emit a total of 58,821 tonnes of CO_2e per year; this is 13,775 tonnes less CO_2e than required of minimally Title 24 compliant dwelling units without renewable energy.

Table 8.0-22, below, provides a comparative assessment of the four residential build-out scenarios evaluated in this inventory, setting forth their respective CO_2e emissions.

Table 8.0-22
Alternative 4 Estimated Residential Emissions For the Specific Plan Site

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	72,576
Title 24 Compliant and Renewable Energy	65,854
15 Percent Better Than Title 24 and Without Renewable Energy	65,543
15 Percent Better Than Title 24 and With Renewable Energy (Applicant's Commitment)	58,821

Source: ENVIRON, 2009.

(For additional information regarding the methodology utilized to quantify the residential emissions, and the assumptions and uncertainties associated with the calculation, please see the discussion of residential emissions in **Subsection 8.5.2.1.1**.)

Nonresidential Emissions. The types of nonresidential buildings that would be built on the Specific Plan site following approval and implementation of Alternative 4 would be identical to those enabled under Alternative 2 (the proposed Project). (Please see **Subsection 8.5.2.1.1**.)

Newhall Land has committed to making all new nonresidential buildings 15 percent more energy efficient than what Title 24 (2005) requires, or 15 percent more energy efficient on a TDV basis. The applicant's commitment results in a reduction of energy use for all nonresidential building types. Due to the project design feature of reducing energy use 15 percent below that in Title 24, a reduction of over 4,358 tonnes of CO_2e per year would be realized from the nonresidential buildings.

The applicant also may install one 2.0 kW photovoltaic power system on every 1,600 square feet of nonresidential roof area within the Specific Plan site in order to reduce the energy and natural gas use demands. This renewable energy would offset yet another 1,930 tonnes of CO_2e annually.

Overall, these project design features (15 percent better than Title 24 and renewable energy) reduce Alternative 4's nonresidential energy use by 12 percent. These measures would bring the overall CO_2e emissions associated with nonresidential energy use down to approximately 44,775 tonnes of CO_2e/year. A comparative summary of the emissions inventory results is provided in **Tables 8.0-23** and **8.0-24**.

Table 8.0-23
Alternative 4 Estimated Nonresidential Emissions By Building Type For The Specific Plan Site

Building Type	Title 24 Compliant (Tonnes of CO_2e/year)	15 Percent Better Than Title 24 (Tonnes of CO_2e/year)
Grocery	3,104	2,963
Miscellaneous Retail/ Commercial/Office	40,335	36,986
Hotel	788	710
Business Park/Industrial	3,857	3,396
Public Safety	359	300
Institutional (Schools, Libraries, *etc*.)	2,620	2,350

Source: ENVIRON, 2009.

Table 8.0-24
Alternative 4 Estimated Nonresidential Emissions For The Specific Plan Site

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e /year)
Title 24 Compliant	51,063
15 Percent Better Than Title 24 and Without Reliance on Renewable Energy	46,705
15 Percent Better Than Title 24 and With Reliance on Renewable Energy (Applicant's Commitment)	44,775

Source: ENVIRON, 2009.

(For additional information regarding the methodology utilized to quantify the emissions resulting from the nonresidential buildings that Alternative 4 would facilitate, and the uncertainties and assumptions associated with the calculations, please refer to **Subsection 8.5.2.1.1**.)

Mobile Source Emissions. Alternative 4's mobile source emissions would result from the typical daily operation of motor vehicles by Specific Plan residents. Under Alternative 4, the total approximate amount of GHGs emitted by mobile sources would be 160,729 tonnes of CO_2e/year. (Please refer to **Subsection 8.5.2.1.1** for additional information relating to the mobile source emissions methodology.)

Municipal Emissions. Municipal sources of GHG emissions following Specific Plan build-out under Alternative 4 would include both the supply and treatment of water and wastewater, public lighting, and municipal vehicles (*e.g.*, police cars and garbage trucks). These emissions would result in approximately 18,230 tonnes of CO_2e per year. (For additional information relating to the methodology relied upon when calculating Alternative 4's municipal source emissions, please refer to **Subsection 8.5.2.1.1**.)

Golf Course Emissions. Build-out of the Specific Plan under Alternative 4 would lead to the operation of an 18-hole golf course. Carbon dioxide emissions were calculated for three operational aspects of the golf course: (1) irrigation; (2) maintenance (*e.g.*, mowing); and (3) on-site building energy use. In total, the three operational components of the golf course are estimated to result in 192 tonnes of CO_2e. **(Subsection 8.5.2.1.1**, above, contains additional information relating to the methodology and formula used to quantify the emissions associated with operation of the Specific Plan's golf course.)

Area Source Emissions. The area emissions from the Specific Plan site are attributed to hearths and landscaping fuel combustion sources. Upon partial build-out of the Specific Plan site, under Alternative 4, area sources from the Specific Plan site account for approximately 2,537 tonnes of CO_2e per year under Alternative 4. (Please see **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized in this analysis to quantify area source emissions.)

Recreation Center Emissions. Approximately forty recreation centers would be constructed if Specific Plan build-out is facilitated under Alternative 4. This analysis assumed that pools would be the main consumers of energy in the proposed recreation centers. Because the Specific Plan pools facilitated by Alternative 4 would have solar water heating, the total yearly CO_2e emissions from the 40 recreation centers on the Specific Plan site is 3,968 tonnes. (Please see **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized in this analysis, including detail concerning the energy savings resulting from Newhall Land's reliance on solar heating for the recreation center pools.)

8.5.4.1.2 *SCP Direct/Indirect Impacts*

SCP Implementation. Alternative 4 would designate a total of 259.45 acres of spineflower preserves in the Specific Plan area and the VCC and Entrada planning areas. (Please see **Subsection 3.4.4.1.2** for additional information regarding Alternative 4's SCP.) These preserves do not involve any grading or earthwork. Areas within designated spineflower preserves would be undisturbed and preserved in perpetuity. Consequently, no GHGs would be created, and no direct global climate change impacts would result from the SCP. In fact, the SCP's direct impact may be beneficial as it will preserve the carbon sequestration capacity of the dedicated preserves.

Specific Plan Area. As a result of Alternative 4's SCP approval and implementation, partial build-out within the Specific Plan area would be facilitated. The GHG emissions resulting from Specific Plan build-out are evaluated above in **Subsection 8.5.4.1.1**.

Entrada and VCC Planning Areas. As a result of approval and implementation of Alternative 4's SCP, development on a portion of the Entrada planning area would be enabled. Specifically, 1,125 residential units, 450 thousand square feet of commercial development, and 191.5 acres of dedicated and managed open space would be facilitated on the Entrada planning area. As to the VCC planning area, unlike the proposed Project (Alternative 2), Alternative 4 would eliminate all proposed commercial development, resulting in a loss of over 4.2 million square feet of commercial uses, due to the dedication of a spineflower preserve on the VCC planning area. (Please see **Subsection 3.4.4.2** for additional information relating to the build-out facilitated by Alternative 4.) Notably, as build-out of the VCC planning area would be precluded under Alternative 4, no GHG emissions would be emitted. The emissions associated with build-out of the Entrada planning area are considered below.

Land Use Emissions. The removal of existing vegetation on the Entrada planning area in order to accommodate the build-out facilitated by the SCP would contribute to net GHG increases by reducing existing carbon sequestration capacity. However, after completion of build-out within this planning area, many privately owned areas would be re-vegetated with trees, shrubs, and other vegetation. The additional carbon sequestration capacity provided by the new vegetation would reduce the net CO_2e emissions from land use change under Alternative 4 to approximately 1,257 tonnes CO_2e within the Entrada planning area. (The methodology utilized to calculate the land use emissions and the assumptions made in that regard are discussed above in **Subsection 8.5.2.1.1**. Please refer to that subsection for further information.)

Construction Emissions. In order to complete build-out of the Entrada planning area, grading and building construction activities are required. During the site grading phase, the total amount of GHG emissions from grading construction equipment utilized during build-out of the Entrada planning area would be a one-time emission of approximately 10,543 tonnes of CO_2e. The total amount of GHG emissions from the building construction phase would be a one-time emission of 34,285 tonnes of CO_2e. In sum, the total amount of one-time GHG emissions from construction related activities under Alternative 4, including worker commuting during those phases, would be approximately 44,828 tonnes of CO_2e on the Entrada planning area. (The methodology and assumptions relied upon when quantifying the construction emissions affiliated with build-out of the Entrada planning area are the same as those utilized when quantifying construction emissions from Specific Plan build-out. Please refer to **Subsection 8.5.2.1.1** for such information.)

Residential Emissions. As previously discussed (see **Subsection 8.5.2.1.1**), residential buildings generate GHG emissions as a result of activities requiring electricity and natural gas as energy sources. The major types of residential buildings that would be located on the Entrada planning area are single-family homes, attached townhomes or condominiums, and apartments.

Newhall Land has pledged to make all residential buildings on the Entrada planning area 15 percent better than Title 24 (2005) requires. The applicant also may use renewable electricity equivalent to one 2.0 kW

photovoltaic (*i.e.*, solar) system on each single-family detached residence. With 15 percent improvements over Title 24 and with renewable energy, the dwelling units would emit a total of 3,194 tonnes of CO_2e per year; this is 746 tonnes less CO_2e than required of minimally Title 24 compliant dwelling units without renewable energy.

Table 8.0-25, below, provides a comparative assessment of the four residential build-out scenarios evaluated in Alternative 4's inventory.

Table 8.0-25
Alternative 4 Estimated Residential Emissions For the Entrada Planning Area

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	3,940
Title 24 Compliant and Renewable Energy	3,575
15 Percent Better Than Title 24 and Without Renewable Energy	3,559
15 Percent Better Than Title 24 and With Renewable Energy (Applicant's Commitment)	3,194

Source: ENVIRON, 2009.

(For additional information regarding the methodology used and assumptions made when calculating the residential emissions attributable to build-out of the Entrada planning area, please see **Subsection 8.5.2.1.1**; the methodology and assumptions are the same as those used for quantification of the Specific Plan's build-out of residential uses.)

Nonresidential Emissions. The types of nonresidential buildings that Alternative 4 would facilitate are identical to those facilitated by the proposed Project (Alternative 2). (Please see **Subsection 8.5.2.1.1** for additional information regarding the breakdown of nonresidential building types that would be enabled by Alternative 4 for build-out on the Entrada planning area.)

As previously discussed (see **Subsection 8.5.2.1.1**), the applicant has committed to making all new nonresidential buildings 15 percent more energy efficient than what Title 24 (2005) requires, or 15 percent more energy efficient on a TDV basis. Due to the project design feature of reducing energy use 15 percent below that in Title 24, a reduction of over 435 tonnes of CO_2e per year would be realized from the nonresidential buildings located on the Entrada planning area.

Newhall Land also may install one 2.0 kW photovoltaic power system on every 1,600 square feet of nonresidential roof area within the Entrada planning area. This renewable energy would offset yet another 181 tonnes of CO_2e annually for the Entrada planning area.

Overall, these project design features (15 percent better than Title 24 and renewable energy) reduce the nonresidential energy use by 11 percent for the Entrada planning area. These measures would bring the

overall CO_2e emissions associated with Alternative 4's nonresidential energy use down to approximately 4,554 tonnes of CO_2e/year for the Entrada planning area. A summary of the emissions inventory results is provided in **Tables 8.0-26** and **8.0-27**.

Table 8.0-26
Alternative 4 Estimated Nonresidential Emissions By Building Type For The Entrada Planning Area

Building Type	Title 24 Compliant (Tonnes of CO_2e/year)	15 Percent Better Than Title 24 (Tonnes of CO_2e/year)
Grocery	776	741
Miscellaneous Retail/ Commercial/Office	2,448	2,244
Hotel	1,576	1,420
Public Safety	57	47
Institutional (Schools, Libraries, *etc*.)	314	282

Source: ENVIRON, 2009.

Table 8.0-27
Alternative 4 Estimated Nonresidential Emissions For The Entrada Planning Area

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	5,170
15 Percent Better Than Title 24 and Without Reliance on Renewable Energy	4,735
15 Percent Better Than Title 24 and With Reliance on Renewable Energy (Applicant's Commitment)	4,554

Source: ENVIRON, 2009.

Please refer to **Subsection 8.5.2.1.1** for detailed information regarding the methodology and assumptions relied upon in quantifying GHG emissions resulting from nonresidential buildings.

Mobile Source Emissions. The mobile source emissions facilitated by approval and implementation of Alternative 4's SCP would be from the typical daily operation of motor vehicles by residents of the Entrada planning area. Total approximate amount of GHGs emitted by mobile sources on the Entrada planning area would be 8,726 tonnes of CO_2e/year. (Please see the mobile source emissions discussion in **Subsection 8.5.2.1.1**, which describes the methodology utilized for the mobile source analysis and, in particular, the basis for excluding the commercial development enabled from classification as "new" growth for purposes of quantifying mobile source emissions.)

Municipal Emissions. The overall municipal emissions, attributable to water demand, public lighting and municipal vehicles, for the Entrada planning area under Alternative 4 are approximately 2,184 tonnes of CO_2e. (Please see **Subsection 8.5.2.1.1** for additional information relating to the methodological assumptions and theories utilized to calculate the municipal source emissions.)

Area Source Emissions. The area emission sources considered for the Entrada planning area are hearths and landscaping fuel combustion sources. Upon partial build-out of the Entrada planning area enabled by Alternative 4, 252 tonnes of CO_2e per year would be emitted. (Please see **Subsection 8.5.2.1.1** for additional information (both methodological data and guiding assumptions) regarding the quantification of area source emissions.)

Recreation Center Emissions. Approximately two recreation centers would be constructed if Entrada planning area build-out is facilitated under Alternative 4. This analysis assumed that pools would be the main consumers of energy in the proposed recreation centers. Because the pools facilitated by Alternative 4 would have solar water heating, the total yearly CO_2e emissions from two recreation centers on the Entrada planning area is 200 tonnes. (Please see **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized in this analysis, including detail concerning the energy savings resulting from Newhall Land's reliance on solar heating for the recreation center pools.)

8.5.4.2 Secondary Impacts

A life cycle emissions estimate was provided above (see **Subsection 8.5.2.2**) in relation to the proposed Project for informational purposes only, as the scientific and methodological basis for calculating life cycle emissions is highly uncertain. As this alternative would provide less infrastructure and development than the proposed Project, the life cycle emissions for this alternative are of a lesser quantity than those identified above.

8.5.4.3 Impacts in Context

Table 8.0-28, below, summarizes Alternative 4's GHG emissions inventory.

Table 8.0-28
Summary of GHG Emissions For Alternative 4

Source	Units	RMDP	NRSP	Entrada	VCC	Total	Percent of Annual CO_2e Emissions
Vegetation	one time tonnes of CO_2e	8,734	33,540	1,257	NA	43,531	NA
Construction (Grading)		22,772	167,962	10,543	NA	201,276	NA
Construction (Buildings)		NA	264,137	34,285	NA	298,422	NA
Total (one time emissions)		**31,506**	**465,638**	**46,085**	**NA**	**543,229**	**NA**
Residential Buildings	tonnes of CO_2e/year	NA	58,821	3,194	NA	62,014	20%
Non-residential		NA	44,775	4,554	NA	49,330	16%
Mobile		NA	160,729	8,726	NA	169,455	55%
Municipal		NA	18,230	2,184	NA	20,414	7%
Golf Course		NA	192	NA	NA	192	0.1%
Area Source		NA	2,537	252	NA	2,789	0.9%
Pools / Recreation		NA	3,968	200	NA	4,168	1.4%
Total (annual emissions)		**0**	**289,251**	**19,110**	**NA**	**308,361**	**100%**
Total	tonnes of CO_2e/year	**788**	**300,892**	**20,262**	**NA**	**321,942**	**NA**

These emissions were estimated assuming that the carbon intensity of the electricity supply system and transportation system do not change in the future. This assumption is both conservative and incorrect, as AB 32 mandates change in both areas. Accordingly, the Alternative 4 GHG inventory presented above presents the worst-case scenario. (Please see **Subsection 8.5.2.3** for additional information regarding the scope of the change mandated by AB 32, and the likely GHG reductions in the electricity and fuel sectors.)

As discussed above (see **Subsection 8.5.2.3**), Alternative 2 would not impede California's achievement of AB 32 compliance. This conclusion was reached after evaluating the per capita emissions of the average California resident and the residents of the Specific Plan area and VCC and Entrada planning areas, and assessing the proposed Project under a BAU scenario. Because the development that would be enabled in these areas is energy efficient and promotes sustainable development principles, the impact of the proposed Project was found to be less than significant. This same conclusion applies to Alternative 4, as the GHG emissions inventory for Alternative 4 is less than that for Alternative 2, and Alternative 4 employs all of the same sustainable development principles as the proposed Project.

8.5.5 Impacts of Alternative 5 (Widen Tributary Drainages and Addition of VCC Spineflower Preserve)

8.5.5.1 Direct\Indirect Impacts

8.5.5.1.1 *RMDP Direct/Indirect Impacts*

RMDP Installation. Under Alternative 5, infrastructure would be constructed in and adjacent to the Santa Clara River and tributary drainages within the Project area; however, the RMDP infrastructure proposed under Alternative 5 is comprised of different configurations than that proposed under Alternative 2. (Alternative 5's RMDP infrastructure is described in detail in **Subsection 3.4.5.1.1** of the EIS/EIR.) In order to install Alternative 5's RMDP infrastructure component, the one-time emission of GHGs resulting from land use changes and construction-related activities would occur.

Land Use Emissions. The removal of existing vegetation on the RMDP study area, in order to accommodate installation of the RMDP infrastructure components, would result in GHG emissions by reducing the existing carbon sequestration capacity of the Project area. That is, by removing vegetation that currently reduces CO_2e levels, existing GHG emission levels would increase. Specifically, the loss of existing vegetation resulting from the clearing required for implementation of the Alternative 5 RMDP infrastructure would result in the one-time emission of 9,035 tonnes of CO_2e.

Construction Emissions. GHG emissions would result from the installation of the RMDP infrastructure as various construction-related activities would be required to install the bridges, buried bank stabilization, *etc*. The construction emissions resulting from installation of the Alternative 5 RMDP infrastructure would occur on a one-time basis, and are limited to a finite period of time. The total number of one-time GHG emissions attributable to construction-related activities required for installation of the RMDP infrastructure would be 22,102 tonnes of CO_2e.

Specific Plan Area. Under Alternative 5, the proposed RMDP infrastructure improvements would facilitate partial build-out of the previously approved Specific Plan. Specifically, under Alternative 5, implementation of the RMDP would indirectly facilitate build-out of 20,196 residential units and 5,415 thousand square feet of commercial uses, along with the dedication and management of a total of 9,993 acres of open space. (Please refer to **Subsection 3.4.5.2** for additional information regarding the development enabled by Alternative 5.) The build-out of the Specific Plan area would indirectly result in GHG emissions, as summarized below.

Land Use Emissions. The removal of existing vegetation on the Specific Plan site in order to accommodate the previously approved Specific Plan land uses would contribute to net GHG increases by reducing the existing carbon sequestration capacity of the Specific Plan site. Notably, after completion of Specific Plan build-out, many privately owned areas would be re-vegetated with trees, shrubs, and other vegetation. The additional carbon sequestration provided by the new trees would reduce the net CO_2e emissions from land use change to approximately 32,743 tonnes. (Please refer to the discussion of land use change emissions in **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized to calculate the emissions quantified above.)

Construction Emissions. As previously discussed (see **Subsection 8.5.2.1.1**), build-out of the previously approved Specific Plan land uses would result in construction emissions associated with grading and building construction. Under Alternative 5, the total amount of GHG emissions from grading construction equipment utilized during partial build-out of the Specific Plan site would be a one-time emission of approximately 163,918 tonnes of CO_2e. The total amount of GHG emissions from the building construction phase for Specific Plan development would be a one-time emission of 257,778 tonnes of CO_2e. In sum, the total amount of GHG emissions from construction-related activities occurring during partial build-out of the previously approved Specific Plan, including worker commuting during those phases, would be approximately 421,696 tonnes of CO_2e under Alternative 5.

Residential Emissions. The major types of residential buildings that would be located on the Specific Plan site following partial build-out of the Specific Plan include single-family homes, attached townhomes or condominiums, and apartments. As previously discussed (see **Subsection 8.5.2.1.1**), Newhall Land has committed to making all residential buildings on the Specific Plan site 15 percent better than what is required by Title 24 (2005). This commitment will reduce the electricity and natural gas use of all residential buildings facilitated by Alternative 5. The applicant also may use renewable electricity equivalent to one 2.0 kW photovoltaic (*i.e.*, solar) system on each single-family detached residence. With 15 percent improvements over Title 24 and renewable energy, the dwelling units would emit a total of 57,330 tonnes of CO_2e per year; this is 13,407 tonnes less CO_2e than required of minimally Title 24 compliant dwelling units without renewable energy.

Table 8.0-29, below, provides a comparative assessment of the four residential build-out scenarios evaluated in this inventory, setting forth their respective CO_2e emissions.

Table 8.0-29
Alternative 5 Estimated Residential Emissions For The Specific Plan Site

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	70,737
Title 24 Compliant and Renewable Energy	64,185
15 Percent Better Than Title 24 and Without Renewable Energy	63,882
15 Percent Better Than Title 24 and With Renewable Energy (Applicant's Commitment)	57,330

Source: ENVIRON, 2009.

(For additional information regarding the methodology utilized to quantify the residential emissions, and the assumptions and uncertainties associated with the calculation, please see the discussion of residential emissions in **Subsection 8.5.2.1.1**.)

Nonresidential Emissions. The types of nonresidential buildings that would be built on the Specific Plan site following approval and implementation of Alternative 5 would be identical to those enabled under Alternative 2 (the proposed Project). (Please see **Subsection 8.5.2.1.1**.)

Newhall Land has committed to making all new nonresidential buildings 15 percent more energy efficient than what Title 24 (2005) requires, or 15 percent more energy efficient on a TDV basis. The applicant's commitment results in a reduction of energy use for all nonresidential building types. Due to the project design feature of reducing energy use 15 percent below that in Title 24, a reduction of over 4,284 tonnes of CO_2e per year would be realized from the nonresidential buildings.

The applicant also may install one 2.0 kW photovoltaic power system on every 1,600 square feet of nonresidential roof area within the Specific Plan site in order to reduce the energy and natural gas use demands. This renewable energy would offset yet another 1,902 tonnes of CO_2e annually.

Overall, these project design features (15 percent better than Title 24 and renewable energy) reduce Alternative 5's nonresidential energy use by 12 percent. These measures would bring the overall CO_2e emissions associated with nonresidential energy use down to approximately 43,996 tonnes of CO_2e/year. A summary of the emissions inventory results is provided in **Tables 8.0-30** and **8.0-31**.

Table 8.0-30
Alternative 5 Estimated Nonresidential Emissions By Building Type For The Specific Plan Site

Building Type	Title 24 Compliant (Tonnes of CO_2e/year)	15 Percent Better Than Title 24 (Tonnes of CO_2e/year)
Grocery	3,104	2,963
Miscellaneous Retail/ Commercial/Office	39,454	36,178
Hotel	788	710
Business Park/Industrial	3,857	3,396
Public Safety	359	300
Institutional (Schools, Libraries, *etc*.)	2,620	2,350

Source: ENVIRON, 2009.

Table 8.0-31
Alternative 5 Estimated Nonresidential Emissions For The Specific Plan Site

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e /year)
Title 24 Compliant	50,182
15 Percent Better Than Title 24 and Without Reliance on Renewable Energy	45,898
15 Percent Better Than Title 24 and With Reliance on Renewable Energy (Applicant's Commitment)	43,996

Source: ENVIRON, 2009.

(For additional information regarding the methodology utilized to quantify the emissions resulting from the nonresidential buildings that Alternative 5 would facilitate, and the uncertainties and assumptions associated with the calculations, please refer to **Subsection 8.5.2.1.1**.)

Mobile Source Emissions. Alternative 5's mobile source emissions would result from the typical daily operation of motor vehicles by Specific Plan residents. Under Alternative 5, the total approximate amount of GHGs emitted by mobile sources would be 156,656 tonnes of CO_2e/year. (Please refer to **Subsection 8.5.2.1.1** for additional information relating to the mobile source emissions methodology.)

Municipal Emissions. Municipal sources of GHG emissions following Specific Plan build-out under Alternative 5 would include both the supply and treatment of water and wastewater, public lighting, and municipal vehicles (*e.g.*, police cars and garbage trucks). These emissions would result in approximately 17,791 tonnes of CO_2e per year. (For additional information relating to the methodology relied upon when calculating Alternative 5's municipal source emissions, please refer to **Subsection 8.5.2.1.1**.)

Golf Course Emissions. Build-out of the Specific Plan under Alternative 5 would lead to the operation of an 18-hole golf course. Carbon dioxide emissions were calculated for three operational aspects of the golf course: (1) irrigation; (2) maintenance (*e.g.*, mowing); and (3) on-site building energy use. In total, the three operational components of the golf course are estimated to result in 192 tonnes of CO_2e. **(Subsection 8.5.2.1.1**, above, contains additional information relating to the methodology and formula used to quantify the emissions associated with operation of the Specific Plan's golf course.)

Area Source Emissions. The area emissions from the Specific Plan site are attributed to hearths and landscaping fuel combustion sources. Upon partial build-out of the Specific Plan site, under Alternative 5, area sources from the Specific Plan site account for approximately 2,474 tonnes of CO_2e per year under Alternative 5. (Please see **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized in this analysis to quantify area source emissions.)

Recreation Center Emissions. Approximately 39 recreation centers would be constructed if Specific Plan build-out is facilitated under Alternative 5. This analysis assumed that pools would be the main consumers of energy in the proposed recreation centers. Because the Specific Plan pools facilitated by Alternative 5 would have solar water heating, the total yearly CO_2e emissions from the 39 recreation centers on the Specific Plan site is 3,873 tonnes. (Please see **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized in this analysis, including detail concerning the energy savings resulting from Newhall Land's reliance on solar heating for the recreation center pools.)

8.5.5.1.2 *SCP Direct/Indirect Impacts*

SCP Implementation. Alternative 5 would designate a total of 338.35 acres of spineflower preserves in the Specific Plan area and the VCC and Entrada planning areas. (Please see **Subsection 3.4.5.1.2** for additional information regarding Alternative 5's SCP.) These preserves do not involve any grading or earthwork. Areas within designated spineflower preserves would be undisturbed and preserved in perpetuity. Consequently, no GHGs would be created, and no direct global climate change impacts would result from the SCP. In fact, the SCP's direct impact may be beneficial as it will preserve the carbon sequestration capacity of the dedicated preserves.

Specific Plan Area. As a result of Alternative 5's SCP approval and implementation, partial build-out within the Specific Plan area would be facilitated. The GHG emissions resulting from Specific Plan build-out are evaluated above in **Subsection 8.5.5.1.1**.

Entrada and VCC Planning Areas. As a result of approval and implementation of Alternative 5's SCP, development on a portion of the Entrada planning area would be enabled. Specifically, 959 residential units, 450 thousand square feet of commercial development, and 196.2 acres of dedicated and managed open space would be facilitated on the Entrada planning area. As to the VCC planning area, unlike the proposed Project (Alternative 2), Alternative 5 would eliminate all proposed commercial development, resulting in a loss of over 4.2 million square feet of commercial uses, due to the dedication of a spineflower preserve on the VCC planning area. (Please see **Subsection 3.4.5.2** for additional information relating to the build-out facilitated by Alternative 5.) Notably, as build-out of the VCC planning area would be precluded under Alternative 5, no GHG emissions would be emitted. The emissions associated with build-out of the Entrada planning area are considered below.

Land Use Emissions. The removal of existing vegetation on the Entrada planning area in order to accommodate the build-out facilitated by the SCP would contribute to net GHG increases by reducing existing carbon sequestration capacity. However, after completion of build-out within this planning area, many privately owned areas would be re-vegetated with trees, shrubs, and other vegetation. The additional carbon sequestration capacity provided by the new vegetation would reduce the net CO_2e emissions from land use change under Alternative 5 to approximately 1,175 tonnes of CO_2e within the Entrada planning area. (The methodology utilized to calculate the land use emissions and the assumptions made in that regard are discussed above in **Subsection 8.5.2.1.1**. Please refer to that subsection for further information.)

Construction Emissions. Build-out of the Entrada planning area would require site grading and building construction. During the site grading phase, the total amount of GHG emissions from grading construction equipment utilized during build-out of the Entrada planning area would be a one-time emission of approximately 9,282 tonnes of CO_2e. The total amount of GHG emissions from the building construction phase would be a one-time emission of 30,183 tonnes of CO_2e. In sum, the total amount of one-time GHG emissions from construction related activities under Alternative 5, including worker commuting during those phases, would be approximately 39,465 tonnes of CO_2e on the Entrada planning area. (The methodology and assumptions relied upon when quantifying the construction emissions affiliated with build-out of the Entrada planning area are the same as those utilized when quantifying construction emissions from Specific Plan build-out. Please refer to **Subsection 8.5.2.1.1** for such information.)

Residential Emissions. As previously discussed (see **Subsection 8.5.2.1.1**), residential buildings generate GHG emissions as a result of activities requiring electricity and natural gas as energy sources. The major types of residential buildings that would be located on the Entrada planning area are single-family homes, attached townhomes or condominiums, and apartments.

Newhall Land has pledged to make all residential buildings developed on the Entrada planning area 15 percent better than required by Title 24 (2005). The applicant also may use renewable electricity equivalent to one 2.0 kW photovoltaic (*i.e.*, solar) system on each single-family detached residence. With 15 percent improvements over Title 24 and renewable energy, the dwelling units would emit a total of 2,722 tonnes of CO_2e per year; this is 637 tonnes less CO_2e than required of minimally Title 24 compliant dwelling units without renewable energy.

Table 8.0-32, below, provides a comparative assessment of the four residential build-out scenarios evaluated in Alternative 5's inventory, setting forth their respective CO_2e emissions.

Table 8.0-32
Alternative 5 Estimated Residential Emissions For The Entrada Planning Area

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	3,359
Title 24 Compliant and Renewable Energy	3,048
15 Percent Better Than Title 24 and Without Renewable Energy	3,033
15 Percent Better Than Title 24 and With Renewable Energy (Applicant's Commitment)	2,722

Source: ENVIRON, 2009.

(For additional information regarding the methodology used and assumptions made when calculating the residential emissions attributable to build-out of the Entrada planning area, please see **Subsection 8.5.2.1.1**; the methodology and assumptions are the same as those used for quantification of the Specific Plan's build-out of residential uses.)

Nonresidential Emissions. The types of nonresidential buildings that Alternative 5 would facilitate are identical to those facilitated by the proposed Project (Alternative 2). (Please see **Subsection 8.5.2.1.1** for additional information regarding the breakdown of nonresidential building types that would be enabled by Alternative 5 for build-out on the Entrada planning area.)

As previously discussed (see **Subsection 8.5.2.1.1**), the applicant has committed to making all new nonresidential buildings 15 percent more energy efficient than what Title 24 (2005) requires, or 15 percent more energy efficient on a TDV basis. Due to the project design feature of reducing energy use 15 percent below that in Title 24, a reduction of over 435 tonnes of CO_2e per year would be realized from the nonresidential buildings located on the Entrada planning area.

Newhall Land also may install one 2.0 kW photovoltaic power system on every 1,600 square feet on nonresidential roof area within the Entrada planning area. This renewable energy would offset yet another 181 tonnes of CO_2e annually for the Entrada planning area.

Overall, these project design features (15 percent better than Title 24 and renewable energy) reduce the nonresidential energy use by 12 percent for the Entrada planning area. These measures would bring the overall CO_2e emissions associated with Alternative 5's nonresidential energy use down to approximately 4,554 tonnes of CO_2e/year for the Entrada planning area. A summary of the emissions inventory results is provided in **Tables 8.0-33** and **8.0-34**.

Table 8.0-33
Alternative 5 Estimated Nonresidential Emissions By Building Type For The Entrada Planning Area

Building Type	Title 24 Compliant (Tonnes of CO_2e/year)	15 Percent Better Than Title 24 (Tonnes of CO_2e/year)
Grocery	776	741
Miscellaneous Retail/ Commercial/Office	2,448	2,244
Hotel	1,576	1,420
Public Safety	57	47
Institutional (Schools, Libraries, *etc*.)	314	282

Source*:* ENVIRON, 2009.

Table 8.0-34
Alternative 5 Estimated Nonresidential Emissions For The Entrada Planning Area

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	5,170
15 Percent Better Than Title 24 and Without Reliance on Renewable Energy	4,735
15 Percent Better Than Title 24 and With Reliance on Renewable Energy (Applicant's Commitment)	4,554

Source: ENVIRON, 2009.

(Please refer to **Subsection 8.5.2.1.1** for detailed information regarding the methodology and assumptions relied upon in quantifying GHG emissions resulting from nonresidential buildings.)

Mobile Source Emissions. The mobile source emissions facilitated by approval and implementation of Alternative 5's SCP would be from the typical daily operation of motor vehicles by residents of the Entrada planning area. The total approximate amount of GHGs emitted by mobile sources on the Entrada planning area would be 7,439 tonnes of CO_2e/year. (Please see the mobile source emissions discussion in **Subsection 8.5.2.1.1**, which describes the methodology utilized for the mobile source analysis and, in particular, the basis for excluding the commercial development enabled from classification as "new" growth for purposes of quantifying mobile source emissions.)

Municipal Emissions. Based on this methodology, the overall municipal emissions for the Entrada planning area under Alternative 5 are approximately 1,9236 tonnes of CO_2e. (**Subsection 8.5.2.1.1** contains additional information relating to the methodology utilized when calculating the emissions generated by this inventory category.)

Area Source Emissions. The area emission sources considered for the Entrada planning area are hearths and landscaping fuel combustion sources. Upon partial build-out of the Entrada planning area enabled by Alternative 5, the Entrada planning area's area sources would emit 215 tonnes of CO_2e per year. (Please see **Subsection 8.5.2.1.1** for additional information (both methodological data and guiding assumptions) regarding the quantification of area source emissions.)

Recreation Center Emissions. Approximately one recreation center would be constructed if Entrada planning area build-out is facilitated under Alternative 5. This analysis assumed that pools would be the main consumers of energy in the proposed recreation center. Because the pools facilitated by Alternative 5 would have solar water heating, the total yearly CO_2e emissions from one recreation center on the Entrada planning area is 100 tonnes. (Please see **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized in this analysis, including detail concerning the energy savings resulting from Newhall Land's reliance on solar heating for the recreation center pools.)

8.5.5.2 Secondary Impacts

A life cycle emissions estimate was provided above (see **Subsection 8.5.2.2**) in relation to the proposed Project for informational purposes only, as the scientific and methodological basis for calculating life cycle emissions is highly uncertain. As this alternative would provide less infrastructure and development than the proposed Project, the life cycle emissions for this alternative are of a lesser quantity than those identified above.

8.5.5.3 Impacts in Context

Table 8.0-35, below, summarizes Alternative 5's emissions inventory.

Table 8.0-35
Summary of GHG Emissions For Alternative 5

Source	Units	RMDP	NRSP	Entrada	VCC	Total	Percent of Annual CO_2e Emissions
Vegetation	one time tonnes of CO_2e	9,035	32,743	1,175	NA	42,953	NA
Construction (Grading)		22,102	163,918	9,282	NA	195,302	NA
Construction (Buildings)		NA	257,778	30,183	NA	287,961	NA
Total (one time emissions)		**31,137**	**454,438**	**40,640**	**NA**	**526,215**	**NA**
Residential Buildings	tonnes of CO_2e/year	NA	57,330	2,722	NA	60,053	20%
Non-residential		NA	43,996	4,554	NA	48,550	16%
Mobile		NA	156,656	7,439	NA	164,095	55%
Municipal		NA	17,791	1,923	NA	19,714	7%
Golf Course		NA	192	NA	NA	192	0.1%
Area Source		NA	2,474	215	NA	2,689	0.9%
Pools / Recreation		NA	3,873	100	NA	3,973	1.3%
Total (annual emissions)		**0**	**282,311**	**16,953**	**NA**	**299,264**	**100%**
Total	tonnes of CO_2e/year	**778**	**293,672**	**17,969**	**NA**	**312,420**	**NA**

These emissions were estimated assuming that the carbon intensity of the electricity supply system and transportation system do not change in the future. This assumption is both conservative and incorrect, as AB 32 mandates change in both areas. Accordingly, the Alternative 5 GHG inventory presented above presents the worst-case scenario. (Please see **Subsection 8.5.2.3** for additional information regarding the scope of the change mandated by AB 32, and the likely GHG reductions in the electricity and fuel sectors.)

As discussed above (see **Subsection 8.5.2.3**), Alternative 2 would not impede California's achievement of AB 32 compliance. This conclusion was reached after evaluating the per capita emissions of the average California resident and the residents of the Specific Plan area and VCC and Entrada planning areas, and assessing the proposed Project under a BAU scenario. Because the development that would be enabled in these areas is energy efficient and promotes sustainable development principles, the impact of the proposed Project was found to be less than significant. This same conclusion applies to Alternative 5, as the GHG emissions inventory for Alternative 5 is less than that for Alternative 2, and Alternative 5 employs all of the same sustainable development principles as the proposed Project.

8.5.6 Impacts of Alternative 6 (Elimination of Planned Commerce Center Drive Bridge and Maximum Spineflower Expansion/Connectivity)

8.5.6.1 Direct\Indirect Impacts

8.5.6.1.1 *RMDP Direct/Indirect Impacts*

RMDP Installation. Under Alternative 6, infrastructure would be constructed in and adjacent to the Santa Clara River and tributary drainages within the Project area; however, the RMDP infrastructure proposed under Alternative 6 is comprised of different configurations than that proposed under Alternative 2. (Alternative 6's RMDP infrastructure is described in detail in **Subsection 3.4.6.1.1** of the EIS/EIR.) In order to install Alternative 6's RMDP infrastructure component, the one-time emission of GHGs resulting from land use changes and construction-related activities would occur.

Land Use Emissions. The removal of existing vegetation on the RMDP study area, in order to accommodate installation of the RMDP infrastructure components, would result in GHG emissions by reducing the existing carbon sequestration capacity of the Project area. That is, by removing vegetation that currently reduces CO_2e levels, existing GHG emission levels would increase. Specifically, the loss of existing vegetation resulting from the clearing required for installation of the Alternative 6 RMDP infrastructure would result in the one-time emission of 8,734 tonnes of CO_2e.

Construction Emissions. GHG emissions would result from the installation of the RMDP infrastructure as various construction-related activities would be required to install the bridges, buried bank stabilization, *etc*. The construction emissions resulting from installation of the Alternative 6 RMDP infrastructure would occur on a one-time basis, and are limited to a finite period of time. The total number of one-time GHG emissions attributable to construction-related activities required for installation of the RMDP infrastructure would be 21,220 tonnes of CO_2e.

Specific Plan Area. Under Alternative 6, the proposed RMDP infrastructure improvements would facilitate partial build-out of the previously approved Specific Plan. Specifically, under Alternative 6, implementation of the RMDP would indirectly facilitate build-out of 19,787 residential units and 5,334 thousand square feet of commercial uses, along with the dedication and management of a total of 10,322 acres of open space. (Please refer to **Subsection 3.4.6.2** for additional information regarding the development enabled by Alternative 6.) The build-out of the Specific Plan area would indirectly result in GHG emissions, as summarized below.

Land Use Emissions. The removal of existing vegetation on the Specific Plan site in order to accommodate the previously approved Specific Plan land uses would contribute to net GHG increases by reducing the existing carbon sequestration capacity of the Specific Plan site. Notably, after completion of Specific Plan build-out, many privately owned areas would be re-vegetated with trees, shrubs, and other vegetation. The additional carbon sequestration provided by the new trees would reduce the net CO_2e emissions from land use change to approximately 33,540 tonnes. (Please refer to the discussion of land use change emissions in **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized the calculate the emissions quantified above.)

Construction Emissions. As previously discussed (see **Subsection 8.5.2.1.1**), build-out of the previously approved Specific Plan land uses would result in construction emissions associated with grading and building construction. Under Alternative 6, the total amount of GHG emissions from grading construction equipment utilized during partial build-out of the Specific Plan site would be a one-time emission of approximately 160,735 tonnes of CO_2e. The total amount of GHG emissions from the building construction phase for Specific Plan development would be a one-time emission of 252,772 tonnes of CO_2e. In sum, the total amount of GHG emissions from construction-related activities occurring during partial build-out of the previously approved Specific Plan, including worker commuting during those phases, would be approximately 413,507 tonnes of CO_2e under Alternative 6.

Residential Emissions. The major types of residential buildings that would be located on the Specific Plan site following partial build-out of the Specific Plan include single-family homes, attached townhomes or condominiums, and apartments. As previously discussed (see **Subsection 8.5.2.1.1**), Newhall Land has committed to making all residential buildings on the Specific Plan site 15 percent better than what is required by Title 24 (2005). This commitment will reduce the electricity and natural gas use of all residential buildings facilitated by Alternative 6. The applicant also may use renewable electricity equivalent to one 2.0 kW photovoltaic (*i.e.*, solar) system on each single-family detached residence. With 15 percent improvements over Title 24 and renewable energy, the dwelling units would emit a total of 56,169 tonnes of CO_2e per year, or 13,136 tonnes less of CO_2e than minimally Title 24 compliant dwelling units without renewable energy.

Table 8.0-36, below, provides a comparative assessment of the four residential build-out scenarios evaluated in this inventory, setting forth their respective CO_2e emissions.

Table 8.0-36
Alternative 6 Estimated Residential Emissions For The Specific Plan Site

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	69,305
Title 24 Compliant and Renewable Energy	62,886
15 Percent Better Than Title 24 and Without Renewable Energy	62,589
15 Percent Better Than Title 24 and With Renewable Energy (Applicant's Commitment)	56,169

Source: ENVIRON, 2009.

(For additional information regarding the methodology utilized to quantify the residential emissions, and the assumptions and uncertainties associated with the calculation, please see the discussion of residential emissions in **Subsection 8.5.2.1.1**.)

Nonresidential Emissions. The types of nonresidential buildings that would be built on the Specific Plan site following approval and implementation of Alternative 6 would be identical to those enabled under Alternative 2 (the proposed Project). (Please see **Subsection 8.5.2.1.1**.)

Newhall Land has committed to making all new nonresidential buildings 15 percent more energy efficient than what Title 24 (2005) requires, or 15 percent more energy efficient on a TDV basis. The applicant's commitment results in a reduction of energy use for all nonresidential building types. Due to the project design feature of reducing energy use 15 percent below that in Title 24, a reduction of over 4,220 tonnes of CO_2e per year would be realized from the nonresidential buildings.

The applicant also may install one 2.0 kW photovoltaic power system on every 1,600 square feet of nonresidential roof area within the Specific Plan site in order to reduce the energy and natural gas use demands. This renewable energy would offset yet another 1,876 tonnes of CO_2e annually.

Overall, these project design features (15 percent better than Title 24 and renewable energy) reduce Alternative 6's nonresidential energy use by 12 percent. These measures would bring the overall CO_2e emissions associated with nonresidential energy use down to approximately 43,303 tonnes of CO_2e/year. A comparative summary of the emissions inventory results is provided in **Tables 8.0-37** and **8.0-38**.

Table 8.0-37
Alternative 6 Estimated Nonresidential Emissions By Building Type For The Specific Plan Site

Building Type	Title 24 Compliant (Tonnes of CO_2e/year)	15 Percent Better Than Title 24 (Tonnes of CO_2e/year)
Grocery	3,104	2,963
Miscellaneous Retail/ Commercial/Office	38,671	35,460
Hotel	788	710
Business Park/Industrial	3,857	3,396
Public Safety	359	300
Institutional (Schools, Libraries, *etc*.)	2,620	2,350

Source: ENVIRON, 2009.

Table 8.0-38
Alternative 6 Estimated Nonresidential Emissions For The Specific Plan Site

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e /year)
Title 24 Compliant	49,399
15 Percent Better Than Title 24 and Without Reliance on Renewable Energy	45,179
15 Percent Better Than Title 24 and With Reliance on Renewable Energy (Applicant's Commitment)	43,303

Source: ENVIRON, 2009.

(For additional information regarding the methodology utilized to quantify the emissions resulting from the nonresidential buildings that would be facilitated by Alternative 6, and the uncertainties and assumptions associated with the calculations, please refer to **Subsection 8.5.2.1.1**.)

Mobile Source Emissions. Alternative 6's mobile source emissions would result from the typical daily operation of motor vehicles by Specific Plan residents. Under Alternative 6, the total approximate amount of GHGs emitted by mobile sources would be 153,484 tonnes of CO_2e/year. (Please refer to **Subsection 8.5.2.1.1** for additional information relating to the mobile source emissions methodology.)

Municipal Emissions. Municipal sources of GHG emissions following Specific Plan build-out under Alternative 6 would include both the supply and treatment of water and wastewater, public lighting, and municipal vehicles (*e.g.*, police cars and garbage trucks). These emissions would result in approximately 17,445 tonnes of CO_2e per year. (For additional information relating to the methodology relied upon when calculating Alternative 6's municipal source emissions, please refer to **Subsection 8.5.2.1.1**.)

Golf Course Emissions. Build-out of the Specific Plan under Alternative 6 would lead to the operation of an 18-hole golf course. Carbon dioxide emissions were calculated for three operational aspects of the golf course: (1) irrigation; (2) maintenance (*e.g.*, mowing); and (3) on-site building energy use. In total, the three operational components of the golf course are estimated to result in 192 tonnes of CO_2e. **(Subsection 8.5.2.1.1**, above, contains additional information relating to the methodology and formula used to quantify the emissions associated with operation of the Specific Plan's golf course.)

Area Source Emissions. The area emissions from the Specific Plan site are attributed to hearths and landscaping fuel combustion sources. Upon partial build-out of the Specific Plan site, under Alternative 6, area sources from the Specific Plan site account for approximately 2,423 tonnes of CO_2e per year under Alternative 6. (Please see **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized in this analysis to quantify area source emissions.)

Recreation Center Emissions. Approximately 38 recreation centers would be constructed if Specific Plan build-out is facilitated under Alternative 6. This analysis assumed that pools would be the main consumers of energy in the proposed recreation centers. Because the Specific Plan pools facilitated by Alternative 6 would have solar water heating, the total yearly CO_2e emissions from the 38 recreation centers on the Specific Plan site is 3,798 tonnes. (Please see **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized in this analysis, including detail concerning the energy savings resulting from Newhall Land's reliance on solar heating for the recreation center pools.)

8.5.6.1.2 *SCP Direct/Indirect Impacts*

SCP Implementation. Alternative 6 would designate a total of 891.93 acres of spineflower preserves in the Specific Plan area and the VCC and Entrada planning areas. (Please see **Subsection 3.4.6.1.2** for additional information regarding Alternative 6's SCP.) These preserves do not involve any grading or earthwork. Areas within designated spineflower preserves would be undisturbed and preserved in perpetuity. Consequently, no GHGs would be created, and no direct global climate change impacts would result from the SCP. In fact, the SCP's direct impact may be beneficial as it will preserve the carbon sequestration capacity of the dedicated preserves.

Specific Plan Area. As a result of Alternative 6's SCP approval and implementation, partial build-out within the Specific Plan area would be facilitated. The GHG emissions resulting from Specific Plan build-out is evaluated above in **Subsection 8.5.6.1.1**.

Entrada and VCC Planning Areas. As a result of approval and implementation of Alternative 6's SCP, development on a portion of the Entrada planning area would be enabled. Specifically, 425 residential units, 450 thousand square feet of commercial development, and 226.1 acres of dedicated and managed open space would be facilitated on the Entrada planning area. As to the VCC planning area, unlike the proposed Project (Alternative 2), Alternative 6 would eliminate all proposed commercial development, resulting in a loss of over 4.2 million square feet of commercial uses, due to the dedication of a spineflower preserve on the VCC planning area. (Please see **Subsection 3.4.6.2** for additional information relating to the build-out facilitated by Alternative 6.) Notably, as build-out of the VCC planning area would be precluded under Alternative 6, no GHG emissions would be emitted. The emissions associated with build-out of the Entrada planning area are considered below.

Land Use Emissions. The removal of existing vegetation on the Entrada planning area in order to accommodate the build-out facilitated by the SCP would contribute to net GHG increases by reducing existing carbon sequestration capacity. After completion of build-out within this planning area, many privately owned areas would be re-vegetated with trees, shrubs, and other vegetation. The additional carbon sequestration capacity provided by the new trees would reduce the net CO_2e emissions from land use change under Alternative 6 to approximately 1,257 tonnes CO_2e within the Entrada planning area. (The methodology utilized to calculate the land use emissions and the assumptions made in that regard are discussed above in **Subsection 8.5.2.1.1**. Please refer to that subsection for further information.)

Construction Emissions. Build-out of the Entrada planning area would require site grading and building construction. During the site grading phase, the total amount of GHG emissions from grading construction equipment utilized during build-out of the Entrada planning area would be a one-time emission of approximately 5,336 tonnes of CO_2e. The total amount of GHG emissions from the building construction phase would be a one-time emission of 17,351 tonnes of CO_2e. In sum, the total amount of one-time GHG emissions from construction related activities under Alternative 6, including worker commuting during those phases, would be approximately 22,687 tonnes of CO_2e on the Entrada planning area. (The methodology and assumptions relied upon when quantifying the construction emissions affiliated with build-out of the Entrada planning area are the same as those utilized when quantifying construction emissions from Specific Plan build-out. Please refer to **Subsection 8.5.2.1.1** for such information.)

Residential Emissions. As previously discussed (see **Subsection 8.5.2.1.1**), residential buildings generate GHG emissions as a result of activities requiring electricity and natural gas as energy sources. The major types of residential buildings that would be located on the Entrada planning area are single-family homes, attached townhomes or condominiums, and apartments.

Newhall Land has pledged to develop all residential buildings in the Entrada planning area with design features that result in the buildings being 15 percent more energy efficient than Title 24 (2005) requires. The applicant also may use renewable electricity equivalent to one 2.0 kW photovoltaic (*i.e.*, solar) system on each single-family detached residence. With 15 percent improvements over Title 24 and with renewable energy, the dwelling units would emit a total of 1,237 tonnes of CO_2e per year; this amount is 285 tonnes less CO_2e than minimally Title 24 compliant dwelling units without renewable energy.

Table 8.0-39, below, provides a comparative assessment of the four residential build-out scenarios evaluated in Alternative 6's inventory, setting forth their respective CO_2e emissions.

Table 8.0-39
Alternative 6 Estimated Residential Emissions For The Entrada Planning Area

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	1,522
Title 24 Compliant and Renewable Energy	1,384
15 Percent Better Than Title 24 and Without Renewable Energy	1,375
15 Percent Better Than Title 24 and With Renewable Energy (Applicant's Commitment)	1,237

Source: ENVIRON, 2009.

For additional information regarding the methodology used and assumptions made when calculating the residential emissions attributable to build-out of the Entrada planning area, please see **Subsection 8.5.2.1.1**; the methodology and assumptions are the same as those used for quantification of the Specific Plan's build-out of residential uses.

Nonresidential Emissions. The types of nonresidential buildings that would be facilitated under Alternative 6 are identical to those facilitated by the proposed Project (Alternative 2). (Please see **Subsection 8.5.2.1.1** for additional information regarding the breakdown of nonresidential building types that would be enabled by Alternative 6 for build-out on the Entrada planning area.)

As previously discussed (see **Subsection 8.5.2.1.1**), the applicant has committed to making all new nonresidential buildings 15 percent more energy efficient than what Title 24 (2005) requires, or 15 percent more energy efficient on a TDV basis. Due to the project design feature of reducing energy use 15 percent below that in Title 24, a reduction of over 435 tonnes of CO_2e per year would be realized from the nonresidential buildings located on the Entrada planning area.

Newhall Land also may install one 2.0 kW photovoltaic power system on every 1,600 square feet of nonresidential roof area within the Entrada planning area. This renewable energy would offset yet another 181 tonnes of CO_2e annually for the Entrada planning area.

Overall, these project design features (15 percent better than Title 24 and renewable energy) reduce the nonresidential energy use by 12 percent for the Entrada planning area. These measures would bring the overall CO_2e emissions associated with Alternative 6's nonresidential energy use down to approximately 4,554 tonnes of CO_2e/year for the Entrada planning area. A summary of the emissions inventory results is provided in **Tables 8.0-40** and **8.0-41**.

Table 8.0-40
Alternative 6 Estimated Nonresidential Emissions By Building Type For The Entrada Planning Area

Building Type	Title 24 Compliant (Tonnes of CO_2e/year)	15 Percent Better Than Title 24 (Tonnes of CO_2e/year)
Grocery	776	741
Miscellaneous Retail/ Commercial/Office	2,448	2,244
Hotel	1,576	1,420
Public Safety	57	47
Institutional (Schools, Libraries, *etc.*)	314	282

Source: ENVIRON, 2009.

Table 8.0-41
Alternative 6 Estimated Nonresidential Emissions For The Entrada Planning Area

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	5,170
15 Percent Better than Title 24 and Without Reliance on Renewable Energy	4,735
15 Percent Better Than Title 24 and With Reliance on Renewable Energy (Applicant's Commitment)	4,554

Source: ENVIRON, 2009.

(Please refer to **Subsection 8.5.2.1.1** for detailed information regarding the methodology and assumptions relied upon in quantifying GHG emissions resulting from nonresidential buildings.)

Mobile Source Emissions. The mobile source emissions facilitated by approval and implementation of Alternative 6's SCP would be from the typical daily operation of motor vehicles by residents of the Entrada planning area. The total approximate amount of GHGs emitted by mobile sources on the Entrada planning area would be 3,363 tonnes of CO_2e/year. (Please see the mobile source emissions discussion in **Subsection 8.5.2.1.1**, which describes the methodology utilized for the mobile source analysis and, in particular, the basis for excluding the commercial development enabled from classification as "new" growth for purposes of quantifying mobile source emissions.)

Municipal Emissions. Based on this methodology, the overall municipal emissions for the Entrada planning area's water needs, public lighting, and municipal vehicles under Alternative 6 are approximately 1,105 tonnes of CO_2e. (**Subsection 8.5.2.1.1** provides additional information regarding the

methodological basis for calculating the municipal emissions associated with build-out of the Entrada planning area.)

Area Source Emissions. The area emission sources considered for the Entrada planning area are hearths and landscaping fuel combustion sources. Upon partial build-out of the Entrada planning area enabled by Alternative 6, the Entrada planning area's area sources would emit 99 tonnes of CO_2e per year. (Please see **Subsection 8.5.2.1.1** for additional information (both methodological data and guiding assumptions) regarding the quantification of area source emissions.)

8.5.6.2 Secondary Impacts

A life cycle emissions estimate was provided above (see **Subsection 8.5.2.2**) in relation to the proposed Project for informational purposes only, as the scientific and methodological basis for calculating life cycle emissions is highly uncertain. As this alternative would provide less infrastructure and development than the proposed Project, the life cycle emissions for this alternative are of a lesser quantity than those identified above.

8.5.6.3 Impacts in Context

Table 8.0-42, below, summarizes the GHG emissions inventory for Alternative 6.

Table 8.0-42
Summary of GHG Emissions For Alternative 6

Source	Units	RMDP	NRSP	Entrada	VCC	Total	Percent of Annual CO_2e Emissions
Vegetation	one time tonnes of CO_2e	8,734	33,540	1,257	NA	43,531	NA
Construction (Grading)		21,220	160,735	5,336	NA	187,291	NA
Construction (Buildings)		NA	252,772	17,351	NA	270,124	NA
Total (one time emissions)		**29,954**	**447,047**	**23,944**	**NA**	**500,946**	**NA**
Residential Buildings	tonnes of CO_2e/year	NA	56,169	1,237	NA	57,406	20%
Non-residential		NA	43,303	4,544	NA	47,857	17%
Mobile		NA	153,484	3,363	NA	156,847	55%
Municipal		NA	17,445	1,105	NA	18,551	6%
Golf Course		NA	192	NA	NA	192	0.1%
Area Source		NA	2,423	99	NA	2,522	0.9%
Pools / Recreation		NA	3,798	NA	NA	3,798	1.3%
Total (annual emissions)		**0**	**276,814**	**10,359**	**NA**	**287,173**	**100%**
Total	tonnes of CO_2e/year	**749**	**287,990**	**10,957**	**NA**	**299,697**	**NA**

These emissions were estimated assuming that the carbon intensity of the electricity supply system and transportation system do not change in the future. This assumption is both conservative and incorrect, as AB 32 mandates change in both areas. Accordingly, the Alternative 6 GHG inventory presented above presents the worst-case scenario. (Please see **Subsection 8.5.2.3** for additional information regarding the scope of the change mandated by AB 32, and the likely GHG reductions in the electricity and fuel sectors.)

As discussed above (see **Subsection 8.5.2.3**), Alternative 2 would not impede California's achievement of AB 32 compliance. This conclusion was reached after evaluating the per capita emissions of the average California resident and the residents of the Specific Plan area and VCC and Entrada planning areas, and assessing the proposed Project under a BAU scenario. Because the development that would be enabled in these areas is energy efficient and promotes sustainable development principles, the impact of the proposed Project was found to be less than significant. This same conclusion applies to Alternative 6, as the GHG emissions inventory for Alternative 6 is less than that for Alternative 2, and Alternative 6 employs all of the same sustainable development principles as the proposed Project.

8.5.7 Impacts of Alternative 7 (Avoidance of 100-Year Floodplain, Elimination of Two Planned Bridges, and Avoidance of Spineflower)

8.5.7.1 Direct\Indirect Impacts

8.5.7.1.1 *RMDP Direct/Indirect Impacts*

RMDP Installation. Under Alternative 7, infrastructure would be constructed in and adjacent to the Santa Clara River and tributary drainages within the Project area; however, the RMDP infrastructure proposed under Alternative 7 is comprised of different configurations than that proposed under Alternative 2. (Alternative 7's RMDP infrastructure is described in detail in **Subsection 3.4.7.1.1** of the EIS/EIR.) In order to install Alternative 7's RMDP infrastructure component, the one-time emission of GHGs resulting from land use changes and construction-related activities would occur.

Land Use Emissions. The removal of existing vegetation on the RMDP study area, in order to accommodate installation of the RMDP infrastructure components, would result in GHG emissions by reducing the existing carbon sequestration capacity of the Project area. Specifically, the loss of existing vegetation resulting from the clearing required for implementation of the Alternative 7 RMDP infrastructure would result in the one-time emission of 4,195 tonnes of CO_2e.

Construction Emissions. GHG emissions would result from the installation of the RMDP infrastructure as various construction-related activities would be required to install the bridges, buried bank stabilization, *etc*. The construction emissions resulting from installation of the Alternative 7 RMDP infrastructure would occur on a one-time basis, and are limited to a finite period of time. The total number of one-time GHG emissions attributable to construction-related activities required for installation of the RMDP infrastructure would be 17,687 tonnes of CO_2e.

Specific Plan Area. Under Alternative 7, the proposed RMDP infrastructure improvements would facilitate partial build-out of the previously approved Specific Plan. Specifically, under Alternative 7,

implementation of the RMDP would indirectly facilitate build-out of 16,471 residential units and 3,764 thousand square feet of commercial uses, along with the dedication and management of a total of 11,073 acres of open space. (Please refer to **Subsection 3.4.7.2** for additional information regarding the development enabled by Alternative 7.) The build-out of the Specific Plan area would indirectly result in GHG emissions, as summarized below.

Land Use Emissions. The removal of existing vegetation on the Specific Plan site in order to accommodate the previously approved Specific Plan land uses would contribute to net GHG increases by reducing the existing carbon sequestration capacity of the Specific Plan site. Notably, after completion of Specific Plan build-out, many privately owned areas would be re-vegetated with trees, shrubs, and other vegetation. The additional carbon sequestration provided by the new trees would reduce the net CO_2e emissions from land use change to approximately 28,122 tonnes. (Please refer to the discussion of land use change emissions in **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized to calculate the emissions quantified above.)

Construction Emissions. As previously discussed (see **Subsection 8.5.2.1.1**), build-out of the previously approved Specific Plan land uses would result in construction emissions associated with grading and building construction. Under Alternative 7, the total amount of GHG emissions from grading construction equipment utilized during partial build-out of the Specific Plan site would be a one-time emission of approximately 131,901 tonnes of CO_2e. The total amount of GHG emissions from the building construction phase for Specific Plan development would be a one-time emission of 207,428 tonnes of CO_2e. In sum, the total amount of GHG emissions from construction-related activities occurring during partial build-out of the previously approved Specific Plan, including worker commuting during those phases, would be approximately 339,329 tonnes of CO_2e under Alternative 7.

Residential Emissions. The major types of residential buildings that would be located on the Specific Plan site following partial build-out of the Specific Plan include single-family homes, attached townhomes or condominiums, and apartments. As previously discussed (see **Subsection 8.5.2.1.1**), Newhall Land has committed to making all residential buildings on the Specific Plan site 15 percent better than what is required by Title 24 (2005). This commitment will reduce the electricity and natural gas use of all residential buildings facilitated by Alternative 7. The applicant also may use renewable electricity equivalent to one 2.0 kW photovoltaic (*i.e.*, solar) system on each single-family detached residence. With 15 percent improvements over Title 24 and renewable energy, the dwelling units would emit a total of 46,756 tonnes of CO_2e per year, or 10,934 tonnes less of CO_2e than minimally Title 24 compliant dwelling units without renewable energy.

Table 8.0-43, below, provides a comparative assessment of the four residential build-out scenarios evaluated in this inventory, setting forth their respective CO_2e emissions.

Table 8.0-43
Alternative 7 Estimated Residential Emissions For The Specific Plan Site

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	57,690
Title 24 Compliant and Renewable Energy	52,347
15 Percent Better Than Title 24 and Without Renewable Energy	52,100
15 Percent Better Than Title 24 and With Renewable Energy (Applicant's Commitment)	46,756

Source: ENVIRON, 2009.

(For additional information regarding the methodology utilized to quantify the residential emissions, and the assumptions and uncertainties associated with the calculation, please see the discussion of residential emissions in **Subsection 8.5.2.1.1**.)

Nonresidential Emissions. The types of nonresidential buildings that would be built on the Specific Plan site following approval and implementation of Alternative 7 would be identical to those enabled under Alternative 2 (the proposed Project). (Please see **Subsection 8.5.2.1.1**.)

Newhall Land has committed to making all new nonresidential buildings 15 percent more energy efficient than what Title 24 (2005) requires, or 15 percent more energy efficient on a TDV basis. The applicant's commitment results in a reduction of energy use for all nonresidential building types. Due to the project design feature of reducing energy use 15 percent below that in Title 24, a reduction of over 2,943 tonnes of CO_2e per year would be realized from the nonresidential buildings.

The applicant also may install one 2.0 kW photovoltaic power system on every 1,600 square feet of nonresidential roof area within the Specific Plan site in order to reduce the energy and natural gas use demands. This renewable energy would offset yet another 1,379 tonnes of CO_2e annually.

Overall, these project design features (15 percent better than Title 24 and renewable energy) reduce Alternative 7's nonresidential energy use by 13 percent. These measures would bring the overall CO_2e emissions associated with nonresidential energy use down to approximately 29,706 tonnes of CO_2e/year. A comparative summary of the emissions inventory results is provided in **Tables 8.0-44** and **8.0-45**.

Table 8.0-44
Alternative 7 Estimated Nonresidential Emissions By Building Type For The Specific Plan Site

Building Type	Title 24 Compliant (Tonnes of CO_2e/year)	15 Percent Better Than Title 24 (Tonnes of CO_2e/year)
Grocery	3,104	2,963
Miscellaneous Retail/ Commercial/Office	23,301	21,366
Hotel	788	710
Business Park/Industrial	3,857	3,396
Public Safety	359	300
Institutional (Schools, Libraries, *etc*.)	2,620	2,350

Source: ENVIRON, 2009.

Table 8.0-45
Alternative 7 Estimated Nonresidential Emissions For The Specific Plan Site

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e /year)
Title 24 Compliant	34,028
15 Percent Better Than Title 24 and Without Reliance on Renewable Energy	31,085
15 Percent Better Than Title 24 and With Reliance on Renewable Energy (Applicant's Commitment)	29,706

Source: ENVIRON, 2009.

(For additional information regarding the methodology utilized to quantify the emissions resulting from the nonresidential buildings that would be facilitated by Alternative 7, and the uncertainties and assumptions associated with the calculations, please refer to **Subsection 8.5.2.1.1**.)

Mobile Source Emissions. Alternative 7's mobile source emissions would result from the typical daily operation of motor vehicles by Specific Plan residents. Under Alternative 7, the total approximate amount of GHGs emitted by mobile sources would be 127,762 tonnes of CO_2e/year. (Please refer to **Subsection 8.5.2.1.1** for additional information relating to the mobile source emissions methodology.)

Municipal Emissions. Municipal sources of GHG emissions following Specific Plan build-out under Alternative 7 would include both the supply and treatment of water and wastewater, public lighting, and municipal vehicles (*e.g.*, police cars and garbage trucks). These emissions would result in approximately 14,316 tonnes of CO_2e per year. (For additional information relating to the methodology relied upon when calculating Alternative 7's municipal source emissions, please refer to **Subsection 8.5.2.1.1**.)

Golf Course Emissions. Build-out of the Specific Plan under Alternative 7 would lead to the operation of an 18-hole golf course. Carbon dioxide emissions were calculated for three operational aspects of the golf course: (1) irrigation; (2) maintenance (*e.g.*, mowing); and (3) on-site building energy use. In total, the three operational components of the golf course are estimated to result in 192 tonnes of CO_2e. **(Subsection 8.5.2.1.1**, above, contains additional information relating to the methodology and formula used to quantify the emissions associated with operation of the Specific Plan's golf course.)

Area Source Emissions. The area emissions from the Specific Plan site are attributed to hearths and landscaping fuel combustion sources. Upon partial build-out of the Specific Plan site, under Alternative 7, area sources from the Specific Plan site account for approximately 2,018 tonnes of CO_2e per year under Alternative 7. (Please see **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized in this analysis to quantify area source emissions.)

Recreation Center Emissions. Approximately 31 recreation centers would be constructed if Specific Plan build-out is facilitated under Alternative 7. This analysis assumed that pools would be the main consumers of energy in the proposed recreation centers. Because the Specific Plan pools facilitated by Alternative 7 would have solar water heating, the total yearly CO_2e emissions from the 31 recreation centers on the Specific Plan site is 3,116 tonnes. (Please see **Subsection 8.5.2.1.1** for additional information regarding the methodology utilized in this analysis, including detail concerning the energy savings resulting from Newhall Land's reliance on solar heating for the recreation center pools.)

8.5.7.1.2 *SCP Direct/Indirect Impacts*

SCP Implementation. Alternative 7 would designate a total of 659.18 acres of spineflower preserves in the Specific Plan area and the VCC and Entrada planning areas. (Please see **Subsection 3.4.7.1.2** for additional information regarding Alternative 7's SCP.) These preserves do not involve any grading or earthwork. Areas within designated spineflower preserves would be undisturbed and preserved in perpetuity. Consequently, no GHGs would be created, and no direct global climate change impacts would result from the SCP. In fact, the SCP's direct impact may be beneficial as it will preserve the carbon sequestration capacity of the dedicated preserves.

Specific Plan Area. As a result of Alternative 7's SCP approval and implementation, partial build-out within the Specific Plan area would be facilitated. The GHG emissions resulting from Specific Plan build-out is evaluated above in **Subsection 8.5.7.1.1**.

Entrada and VCC Planning Areas. As a result of approval and implementation of Alternative 7's SCP, development on a portion of the Entrada planning area would be enabled. Specifically, 852 residential units, 51 thousand square feet of commercial development, and 229.3 acres of dedicated and managed open space would be facilitated on the Entrada planning area. As to the VCC planning area, unlike the proposed Project (Alternative 2), Alternative 7 would eliminate all proposed commercial development, resulting in a loss of over 4.2 million square feet of commercial uses, due to the dedication of a spineflower preserve on the VCC planning area. (Please see **Subsection 3.4.7.2** for additional information relating to the build-out facilitated by Alternative 7.) Notably, as build-out of the VCC planning area would be precluded under Alternative 7, no GHG emissions would be emitted. The emissions associated with build-out of the Entrada planning area are considered below.

Land Use Emissions. The removal of existing vegetation on the Entrada planning area in order to accommodate the build-out facilitated by the SCP would contribute to net GHG increases by reducing existing carbon sequestration capacity. After completion of build-out within this planning area, many privately owned areas would be re-vegetated with trees, shrubs, and other vegetation. The additional carbon sequestration capacity provided by the new trees would reduce the net CO_2e emissions from land use change under Alternative 7 to approximately 1,353 tonnes CO_2e within the Entrada planning area.

The methodology utilized to calculate the land use emissions and the assumptions made in that regard are discussed above in **Subsection 8.5.2.1.1**. Please refer to that subsection for further information.

Construction Emissions. Site grading and building construction activities would be required to build-out a portion of the Entrada planning area. During the site grading phase, the total amount of GHG emissions from grading construction equipment utilized during build-out of the Entrada planning area would be a one-time emission of approximately 6,649 tonnes of CO_2e. The total amount of GHG emissions from the building construction phase would be a one-time emission of 21,621 tonnes of CO_2e. In sum, the total amount of one-time GHG emissions from construction related activities under Alternative 7, including worker commuting during those phases, would be approximately 28,270 tonnes of CO_2e on the Entrada planning area. (The methodology and assumptions relied upon when quantifying the construction emissions affiliated with build-out of the Entrada planning area are the same as those utilized when quantifying construction emissions from Specific Plan build-out. Please refer to **Subsection 8.5.2.1.1** for such information.)

Residential Emissions. As previously discussed (see **Subsection 8.5.2.1.1**), residential buildings generate GHG emissions as a result of activities requiring electricity and natural gas as energy sources. The major types of residential buildings that would be located on the Entrada planning area are single-family homes, attached townhomes or condominiums, and apartments.

Newhall Land has committed to ensuring that all residential buildings developed on the Entrada planning area are 15 percent better than what is required by Title 24 (2005). The applicant also may use renewable electricity equivalent to one 2.0 kW photovoltaic (*i.e.*, solar) system on each single-family detached residence. With 15 percent improvements over Title 24 and with renewable energy, the dwelling units would emit a total of 2,419 tonnes of CO_2e per year; this amount is 565 tonnes less CO_2e than minimally Title 24 compliant dwelling units without renewable energy.

Table 8.0-46, below, provides a comparative assessment of the four residential build-out scenarios evaluated in Alternative 7's inventory, setting forth their respective CO_2e emissions.

Table 8.0-46
Alternative 7 Estimated Residential Emissions For The Entrada Planning Area

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	2,984
Title 24 Compliant and Renewable Energy	2,708
15 Percent Better Than Title 24 and Without Renewable Energy	2,695
15 Percent Better Than Title 24 and With Renewable Energy (Applicant's Commitment)	2,419

Source: ENVIRON, 2009.

(For additional information regarding the methodology used and assumptions made when calculating the residential emissions attributable to build-out of the Entrada planning area, please see **Subsection 8.5.2.1.1**; the methodology and assumptions are the same as those used for quantification of the Specific Plan's build-out of residential uses.)

Nonresidential Emissions. The types of nonresidential buildings that would be facilitated under Alternative 7 are identical to those facilitated by the proposed Project (Alternative 2). (Please see **Subsection 8.5.2.1.1** for additional information regarding the breakdown of nonresidential building types that would be enabled by Alternative 7 for build-out on the Entrada planning area.)

As previously discussed (see **Subsection 8.5.2.1.1**), the applicant has committed to making all new nonresidential buildings 15 percent more energy efficient than what Title 24 (2005) requires, or 15 percent more energy efficient on a TDV basis. Due to the project design feature of reducing energy use 15 percent below that in Title 24, a reduction of over 41 tonnes of CO_2e per year would be realized from the nonresidential buildings located on the Entrada planning area.

Newhall Land also may install one 2.0 kW photovoltaic power system on every 1,600 square feet of nonresidential roof area within the Entrada planning area. This renewable energy would offset yet another 16 tonnes of CO_2e annually for the Entrada planning area.

Overall, these project design features (15 percent better than Title 24 and renewable energy) reduce the nonresidential energy use by 12 percent for the Entrada planning area. These measures would bring the overall CO_2e emissions associated with Alternative 7's nonresidential energy use down to approximately 433 tonnes of CO_2e/year for the Entrada planning area. A summary of the emissions inventory results is provided in **Tables 8.0-47** and **8.0-48**.

Table 8.0-47
Alternative 7 Estimated Nonresidential Emissions By Building Type For The Entrada Planning Area

Building Type	Title 24 Compliant (Tonnes of CO_2e/year)	15 Percent Better Than Title 24 (Tonnes of CO_2e/year)
Miscellaneous Retail/ Commercial/Office	490	449

Source: ENVIRON, 2009.

Table 8.0-48
Alternative 7 Estimated Nonresidential Emissions For The Entrada Planning Area

Build-Out Scenario	Final CO_2e (Tonnes of CO_2e/year)
Title 24 Compliant	490
15 Percent Better Than Title 24 and Without Reliance on Renewable Energy	449
15 Percent Better Than Title 24 and With Reliance on Renewable Energy (Applicant's Commitment)	433

Source: ENVIRON, 2009.

(Please refer to **Subsection 8.5.2.1.1** for detailed information regarding the methodology and assumptions relied upon in quantifying GHG emissions resulting from nonresidential buildings.)

Mobile Source Emissions. The mobile source emissions facilitated by approval and implementation of Alternative 7's SCP would be from the typical daily operation of motor vehicles by residents of the Entrada planning area. The total approximate amount of GHGs emitted by mobile sources on the Entrada planning area would be 6,609 tonnes of CO_2e/year. (Please see the mobile source emissions discussion in **Subsection 8.5.2.1.1**, which describes the methodology utilized for the mobile source analysis and, in particular, the basis for excluding the commercial development enabled from classification as "new" growth for purposes of quantifying mobile source emissions.)

Municipal Emissions. Based on this methodology, the overall municipal emissions for the Entrada planning area under Alternative 7 are approximately 1,377 tonnes of CO_2e. (**Subsection 8.5.2.1.1** contains additional information relating to the calculation of municipal emissions on the Entrada planning area.)

Area Source Emissions. The area emission sources considered for the Entrada planning area are hearths and landscaping fuel combustion sources. Upon partial build-out of the Entrada planning area enabled by Alternative 7, the Entrada planning area's area sources would emit 191 tonnes of CO_2e per year. (Please

see **Subsection 8.5.2.1.1** for additional information (both methodological data and guiding assumptions) regarding the quantification of area source emissions.)

8.5.7.2 Secondary Impacts

A life cycle emissions estimate was provided above (see **Subsection 8.5.2.2**) in relation to the proposed Project for informational purposes only, as the scientific and methodological basis for calculating life cycle emissions is highly uncertain. As this alternative would provide less infrastructure and development than the proposed Project, the life cycle emissions for this alternative are of a lesser quantity than those identified above.

8.5.7.3 Impacts in Context

Table 8.0-49, below, summarizes the GHG emissions inventory for Alternative 7.

Table 8.0-49
Summary of GHG Emissions For Alternative 7

Source	Units	RMDP	NRSP	Entrada	VCC	Total	Percent of Annual CO_2e Emissions
Vegetation	one time tonnes of CO_2e	4,195	28,122	1,353	NA	33,670	NA
Construction (Grading)		17,687	131,901	6,649	NA	156,236	NA
Construction (Buildings)		NA	207,428	21,621	NA	229,049	NA
Total (one time emissions)		**21,881**	**367,451**	**29,623**	**NA**	**418,955**	**NA**
Residential Buildings	tonnes of CO_2e/year	NA	46,756	2,419	NA	49,175	21%
Non-residential		NA	29,706	433	NA	30,139	13%
Mobile		NA	127,762	6,609	NA	134,371	57%
Municipal		NA	14,316	1,377	NA	15,693	7%
Golf Course		NA	192	NA	NA	192	0.1%
Area Source		NA	2,018	191	NA	2,210	0.9%
Pools / Recreation		NA	3,116	NA	NA	3,116	1.3%
Total (annual emissions)		**0**	**223,867**	**11,029**	**NA**	**234,895**	**100%**
Total	tonnes of CO_2e/year	**547**	**233,053**	**11,769**	**NA**	**245,369**	**NA**

These emissions were estimated assuming that the carbon intensity of the electricity supply system and transportation system do not change in the future. This assumption is both conservative and incorrect, as AB 32 mandates change in both areas. Accordingly, the Alternative 7 GHG inventory presented above presents the worst-case scenario. (Please see **Subsection 8.5.2.3** for additional information regarding the scope of the change mandated by AB 32, and the likely GHG reductions in the electricity and fuel sectors.)

As discussed above (see **Subsection 8.5.2.3**), Alternative 2 would not impede California's achievement of AB 32 compliance. This conclusion was reached after evaluating the per capita emissions of the average California resident and the residents of the Specific Plan area and VCC and Entrada planning areas, and assessing the proposed Project under a BAU scenario. Because the development that would be enabled in these areas is energy efficient and promotes sustainable development principles, the impact of the proposed Project was found to be less than significant. This same conclusion applies to Alternative 7, as the GHG emissions inventory for Alternative 7 is less than that for Alternative 2, and Alternative 7 employs all of the same sustainable development principles as the proposed Project.

8.6 MITIGATION MEASURES

8.6.1 Mitigation Measures Already Required by the Adopted Specific Plan and VCC Project Approvals

The County of Los Angeles previously adopted mitigation measures that will minimize global climate change impacts and promote sustainable development in connection with its approval of the Newhall Ranch Specific Plan Program EIR. These measures are specified by the certified Newhall Ranch Specific Plan Program EIR and the adopted Mitigation Monitoring Plan for the Specific Plan (May 2003). The previously approved mitigation measures are summarized in **Table 8.0-1**, above. In addition, the County adopted mitigation measures as part of its approval of the VCC project that will minimize global climate change and promote sustainable development. These measures are summarized in **Table 8.0-2**, above. The County has not yet prepared a draft EIR for the proposed development within the portion of the Entrada planning area that would be facilitated by approval of the SCP component of the proposed Project. As a result, there are no previously adopted mitigation measures for the Entrada planning area. However, it is reasonably expected that the County of Los Angeles would adopt global climate change mitigation measures associated with the approval of subsequent development in the Entrada planning area.

8.6.2 Additional Project-Specific Mitigation Measures Proposed by this EIS/EIR

As identified and described in the inventory of GHG emissions that would result from the proposed Project, build-out on the Specific Plan site and the VCC and Entrada planning areas would be subject to numerous project design features that ensure that the proposed Project does not impede compliance with AB 32. In order to ensure that these project design features are implemented, they are recommended here as 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 proposed Project.

These mitigation measures are in addition to those adopted in the previously certified Newhall Ranch Specific Plan Program EIR and the VCC EIR. To indicate that the measures relate specifically to the proposed Project, each measure is preceded by "GCC," which stands for "Global Climate Change."

GCC-1 All residential buildings on the Project applicant's land holdings that are facilitated by approval of the proposed Project shall be designed 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 fifteen percent (15%) better than the standards presently required by Title 24 (2005).

GCC-2 All commercial and public buildings on the Proposed applicant's land holdings that are facilitated by approval of the proposed Project shall be designed 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 fifteen percent (15%) better than the standards presently required by Title 24 (2005).

GCC-3 The Project applicant or designee shall produce or purchase renewable electricity, equivalent to the installation of one 2.0 kilowatt photovoltaic (*i.e.*, solar) power system, when undertaking the design and construction of each single-family detached residential unit on its land holdings that is facilitated by approval of the proposed Project; or, at the applicant's option, prior to commencing construction of any new phase of any individual subdivision, the applicant shall secure offsets or credits for carbon dioxide equivalents from either the Climate Action Reserve of the California Climate Action Registry, the Chicago Climate Exchange, or similar reserve/exchange; or, alternatively, at the applicant's option, the applicant may pay to the South Coast Air Quality Management District (District) the equivalent amount of funds that would be due to buy credits from the Climate Action Reserve, Chicago Climate Exchange, or similar reserve/exchange for greenhouse gas emission mitigation purposes. In any case, installation of individual photovoltaic systems shall be considered when undertaking the design and construction of residential buildings on the Project site.

GCC-4 The Project applicant or designee shall produce or purchase renewable electricity equivalent to the installation of one 2.0 kilowatt photovoltaic system on each 1,600 square feet of nonresidential roof area provided on the Project site; or, at the applicant's option, prior to commencing construction of any new phase of any individual subdivision, the applicant shall secure offsets or credits for carbon dioxide equivalents from either the Climate Action Reserve of the California Climate Action Registry, the Chicago Climate Exchange, or similar reserve/exchange; or, alternatively, at the applicant's option, the applicant may pay to the South Coast Air Quality Management District (District) the equivalent amount of funds that would be due to buy credits from the Climate Action Reserve, Chicago Climate Exchange, or similar reserve/exchange for greenhouse gas emission mitigation purposes. In any case, installation of individual photovoltaic systems shall be considered when undertaking the design and construction of nonresidential buildings on the Project site.

GCC-5 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 on or after January 1, 2011. The seller shall disclose the total installed cost of the solar energy system option, and the estimated cost savings.

GCC-6 The Project applicant or designee shall use solar water heating for each of the pools located at the recreation centers that would by facilitated by approval of the proposed Project (*i.e.*, the

pools that would be located at the forty recreation centers within the Specific Plan area, and the two recreation centers within the Entrada planning area).

GCC-7 The Project applicant or designee, in accordance with Los Angeles County requirements, will design and construct all municipal facilities (*i.e.,* fire stations) facilitated by approval of the proposed Project so as to achieve LEED silver certification.

In addition to the seven global climate change mitigation measures identified above, mitigation measures recommended in connection with other sections of the draft EIS/EIR also would reduce the proposed Project's GHG emissions and improve the proposed Project's capacity to respond to the effects of global climate change. As these 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 global climate change impacts, and otherwise promote sustainable development.

8.6.3 Additional Potentially Feasible Programs

The Project applicant also is pursuing implementation of two potentially feasible programs that may result in further GHG emission reductions. The feasibility of the following two programs is still uncertain, but nonetheless the applicant is committed to working with Los Angeles County, Southern California Edison, and Southern California Gas Company with respect to each program:

Energy Efficient Municipal Lighting Program. The applicant is committed to working with the County of Los Angeles and Southern California Edison to install, where feasible, energy efficient municipal lighting in the Project area. Although the exact parameters and feasibility of the program have not yet been determined, it is estimated that the installation of energy efficient municipal lighting may result in a reduction of anywhere from 486 to 1,216 tonnes of carbon dioxide equivalents per year.

Smart Meter Program. 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 that would be facilitated by approval of the proposed Project in the Project area. Although the GHG emissions reductions achieved *via* the implementation of a smart meter program are uncertain, such a program may result in a reduction of up to 6,418 tonnes of carbon dioxide equivalents per year.

8.6.4 Consistency With Recommended Mitigation Programs

The proposed Project also is compatible with many of the mitigation measures recommended by the California Attorney General's Office and the Climate Action Team. **Table 8.0-50**, Compatibility with the California Attorney General GHG Emission Reduction Strategies, and **Table 8.0-51**, 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.

Table 8.0-50
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 that would be enabled by the proposed Project would be at least 15 percent more energy efficient than Title 24 (2005) requires, and, where specified, would rely on renewable energy sources to satisfy 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 County of Los Angeles and Southern California Edison to install, where feasible, energy efficient municipal lighting in the development facilitated on the Project site. 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 development facilitated on the Project site would result in the planting of at least 35,000 new net trees in the Specific Plan area, 5,000 in the VCC planning area, and 2,500 in the Entrada planning. The inclusion of new vegetation would increase shade throughout the Project site, which currently is characterized by cultivated row crops and low brush. 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 enabled by the proposed Project would not be considered large energy users.
Install energy efficient heating and cooling systems, appliances and equipment, and control systems.	*Compatible:* As discussed throughout this section, the residential and non-residential land uses facilitated by the proposed Project would be at least 15 percent more efficient than required by Title 24 (2005). 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. Therefore, the proposed Project would further implementation of this reduction strategy.
Install light emitting diodes (LEDs) for traffic, street, and other outdoor lighting.	*Compatible:* The Project applicant is committed to working with the County of Los Angeles 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.

Table 8.0-50
Compatibility with California Attorney General GHG Emission Reduction Strategies

Measure	Compatibility of Project
Limit the hours of operation of outdoor lighting.	*Not Applicable:* The Project applicant has little to no control over the hours of operation of outdoor lighting at the residential and nonresidential development that would be enabled by the proposed Project.
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 each of the pools located at the recreation centers that would be built in the Specific Plan area and Entrada planning area. Therefore, the proposed Project would further implementation of this reduction strategy.
Provide education on energy efficiency.	*Compatible*: The Project applicant is committed to providing the future property owners of land uses built on the project site with energy efficiency materials. In addition, 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 USEPA 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 may use renewable electricity, equivalent to one 2-kilowatt photovoltaic (*i.e.*, solar) power systems, when undertaking the design and construction of each single-family detached residential unit that would be developed on the Project site. In addition, renewable electricity may be utilized for some of the nonresidential development facilitated. 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 may use renewable electricity for both single-family residential and nonresidential development facilitated by approval of the proposed Project. 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.

Table 8.0-50
Compatibility with California Attorney General GHG Emission Reduction Strategies

Measure	Compatibility of Project
	The land uses that would be built on the Project site do not lend themselves to cogeneration.
Water Conservation and Efficiency [1]	
Create water-efficient landscapes.	*Compatible:* The applicant is committed to using native (or non-native/non-invasive) 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 as part of the Newhall Ranch Water Reclamation Plant. 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 Newhall Ranch Water Reclamation Plant, 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.	*Incompatible:* While the proposed Project would not rely on graywater, the proposed Project would use reclaimed water for landscape irrigation. Therefore, 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 development facilitated on 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

Table 8.0-50
Compatibility with California Attorney General GHG Emission Reduction Strategies

Measure	Compatibility of Project
	Management Practices (BMPs) to disconnect impervious surfaces and reduce runoff volumes through evapotranspiration and infiltration. (Please see **Section 4.4**, Water Quality, of the Draft EIS/EIR for additional information.) Therefore, the proposed Project would further implementation of this reduction strategy.
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 Project applicant has committed to implementing an educational program, targeted at both residents and commercial businesses, regarding services that could affect water use and quality. Further, the site design for individual villages within the Specific Plan area would include the provision of a car wash pad connected to sanitary sewer in the multi-family residential areas. (Please see **Section 4.4**, Water Quality, of the Draft EIS/EIR for additional information.) 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 Best Management Practices are to maintain a landscape functionally equivalent to predevelopment hydrologic conditions and to minimize the generation of pollutants of concern. The Los Angeles County Municipal Stormwater Permit and the State Board's Construction Storm Water General Permit regulate construction Best Management Practices for private and public construction in Los Angeles County, and Newhall Ranch is featured as a "low impact development." Please also see **Section 4.4**, Water Quality, of the Draft EIS/EIR, which discusses various low-impact project design features of the development enabled by the proposed Project (*e.g.*, clustered development; reserved open space; minimizing impervious areas through landscaping; buffer areas between the project site and the Santa Clara River Corridor; *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:* As discussed in **Section 4.3**, Water Service, of the Draft EIS/EIR, potable water demand for the Specific Plan area would be met by the Valencia Water Company through the use of the Project applicant's rights to groundwater from the Alluvial aquifer, which is presently used by the applicant for agricultural irrigation. Potable water demand for the Entrada and VCC planning areas would be met through State Water Project water supplies. Non-potable water demand would be met through the use of recycled

Table 8.0-50
Compatibility with California Attorney General GHG Emission Reduction Strategies

Measure	Compatibility of Project
	(reclaimed) water from the initial phase of the Newhall Ranch Water Reclamation Plant, with build-out of the Water Reclamation Plant occurring over time as demand for treatment increases. Alternatively, if the Newhall Ranch Water Reclamation Plant is not operating at the time of project occupancy, the non-potable water demand would be met through the use of recycled water from the existing Valencia Water Reclamation Plant, located upstream of the Project site. In addition, the Valencia Water Company is a member of the California Urban Water Conservation Council ("CUWCC"). (See http://www.cuwcc.org/home.html.) The primary mission of the CUWCC is to increase efficient water use statewide through partnerships among urban water agencies, public interest organizations, and private entities. Accordingly, the CUWCC has committed to implementing numerous Best Management Practices to improve water efficiency. These Best Management Practices address residential surveys; retrofits; audits; metering; landscaping; clothes washers; public information; school education; wholesaler incentives; rates; waste prohibitions; *etc.* (See http://www.cuwcc.com/mbmp.lasso.) In summary, the proposed Project would further implementation of this reduction strategy.
Provide education about water conservation and available programs and incentives.	*Compatible:* Valencia Water Company, which would provide water supply services to the Project site, operates a water conservation management program. Valencia Water Company's contractor, Water Wise Consulting, at no cost, visits residences, inspects the residence for leaks, installs water saving devices, and shares conservation information with the occupant. (See http://www.valenciawater.com/conservation/index.asp.) Therefore, the proposed Project would further implementation of 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 4.20**, Solid Waste Services, of the Draft EIS/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 includes providing recycling areas that are conveniently located,

Table 8.0-50
Compatibility with California Attorney General GHG Emission Reduction Strategies

Measure	Compatibility of Project
	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.
Provide education and publicity about reducing waste and available recycling services.	*Compatible:* Consistent with Specific Plan mitigation measure 4.15-3, the first purchaser of each residential unit within the Specific Plan area would be provided with educational or instructional materials addressing recyclable materials. In addition, the local waste management provider (Burrtec Waste Industries, Inc.) would distribute and/or have available online informational materials regarding reducing waste and its recycling services during the ordinary course of business. (See http://www.burrtec.com.) 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 proposed Project would enable build-out of a broad range of housing types and nonresidential uses. Within the Project site, many residents will be located within walking distances to commercial and mixed-use areas, schools, community parks, and trails. In addition, bike and pedestrian trails within the Specific Plan area would connect to trails within the VCC planning area. 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 Project applicant has prepared a community outreach, informational document to educate the public about the advantages of residing within a well-designed community, such as the Newhall Ranch Specific Plan—*Sustainability in Action: Landmark Village* (2007). (This document is located in **Appendix 8.0**.) Therefore, the proposed Project would further implementation of this reduction strategy.
Incorporate public transit into project design.	*Compatible:* Although not a "transit priority project," as defined by SB 375, the land use and circulation plans for the development enabled by the proposed Project have been designed to minimize car trips and reduce GHG emissions. Accordingly, mass transit would be conveniently located through the development of a new transit station, park-and-ride lot(s), and bus stops. In addition, an approximate 5-mile right-of-way for a

Table 8.0-50
Compatibility with California Attorney General GHG Emission Reduction Strategies

Measure	Compatibility of Project
	potential Metrolink extension also is included in the circulation plan. Trails and bike paths leading to close-to-home jobs, neighborhood serving retail, and the elementary school would encourage residents to enjoy the walkability of the community. 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:* The development facilitated by the proposed Project would result in the planting of at least 35,000 new net trees in the Specific Plan area, 5,000 in the VCC planning area, and 2,500 in the Entrada planning, and the installation and maintenance of other landscaping throughout the site. In addition, as discussed in **Section 4.16**, Parks, Recreation, and Trails, of the Draft EIS/EIR, build-out of the Specific Plan will provide the following acreages of parks and Open Area: 10 public Neighborhood Parks totaling 55 acres; Open Areas totaling 1,106 acres, of which 186 acres are Community Parks; High Country Special Management Area of 4,214 acres; River Corridor Special Management Area of 819 acres; a 15-acre Lake; an 18-hole Golf Course; and, a trail system consisting of a Regional River Trail, Community Trails, and Unimproved Trails. In addition, the proposed Project would result a managed preserve comprised, in part, of a 1,517-acre portion of the Salt Creek watershed and wildlife corridor in Ventura County and the grant of a conservation easement to CDFG over approximately 167.6 acres of the applicant's land holdings in Los Angeles County.
Develop "brownfields" and other underused or defunct properties near existing public transportation and jobs.	*Not Applicable:* The Project site is not considered a "brownfield," and presently is characterized by agricultural uses.
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:* Many of the residential units that would be built out in the Specific Plan area and Entrada planning area would be located within walking distance of village or commercial centers. The development enabled on the Project site also would include paseos and trails, including the Santa Clara River Regional Trail, which would facilitate pedestrian access. Therefore, the proposed Project would further implementation of this reduction strategy.
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

Table 8.0-50
Compatibility with California Attorney General GHG Emission Reduction Strategies

Measure	Compatibility of Project
	would neither hinder nor impede implementation of the anti-idling regulations.
Use low or zero-emission vehicles, including construction vehicles.	*Compatible:* As provided in Specific Plan's air quality mitigation measures, TLEV, ULEV, LEV, and ZEV would be operated in connection with the commercial and business park land uses. Therefore, the proposed Project would further implementation of this 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:* Various mitigation measures adopted in connection with the Newhall Ranch Specific Plan would accomplish the goals identified in the recommended reduction strategy by facilitating and providing incentives for ride-sharing efforts. The Los Angeles County Metropolitan Transportation Authority also has over 100 conveniently located park-and-ride locations countywide, and sponsors a subsidized metro vanpool program. (See http://www.metro.net riding_metro/commute_services/vanpool/default.htm.) 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 proposed Project would neither impede nor hinder 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 development enabled on the Project site, which is structured to provide optimal walkability via the paseos and trails, serves 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:* 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. Moreover, as previously mentioned, the development enabled on the Project site has been designed to be walkable, thereby reducing the need to operate or rely on motor vehicle transportation to reach many essential services (*e.g.*, schools; food and gas;

Table 8.0-50
Compatibility with California Attorney General GHG Emission Reduction Strategies

Measure	Compatibility of Project
	parks; *etc.*). The proposed Project would neither hinder nor impede implementation of this reduction strategy.
Increase the cost of driving and parking private vehicles by, *e.g.*, imposing tolls and parking fees.	*Compatible:* Mitigation measures adopted in connection with the Newhall Ranch Specific Plan would provide preferential parking for carpools and vanpools, and implement pricing structures for parking to favor more efficient group travel. Moreover, market forces (*e.g.*, oil prices) are the primary driver of increased driving costs. In light of these ever-increasing costs, the development enabled on the Project site would encourage and facilitate use of numerous types of alternative transportation via the community's walkability and extensive trail network, park-and-ride lot(s), bus stops, the right-of-way for a potential Metrolink extension, *etc.* Therefore, the proposed Project would further implementation of this reduction strategy.
Build or fund a transportation center where various public transportation modes intersect.	*Compatible:* As previously mentioned, the Newhall Ranch Specific Plan would include numerous modes of public transportation (*e.g.*, park-and-ride lot; bus stops; the regional trail network; right-of-way for Metrolink extension; paseos; *etc.*) in close proximity to one another to accommodate the future residents, visitors, and occupants of the Specific Plan land uses. Therefore, the proposed Project would further implementation of this reduction strategy.
Provide shuttle service to public transit.	*Compatible:* Consistent with the mitigation measures adopted in connection with the Newhall Ranch Specific Plan Program EIR, there would be a variety of shuttle services to and from residential, commercial, and business park land uses throughout the Specific Plan area. The City of Santa Clarita also 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.) Therefore, the proposed Project would further implementation of this reduction strategy.
Provide public transit incentives such as free or low-cost monthly transit passes.	*Not Applicable:* Public transit incentives typically are provided by education facilities and businesses. The Project applicant has little to no control over whether individual business owners elect to incentive the use of public transit via free or low-cost passes.
Incorporate bicycle lanes and routes into street systems, new subdivision, and large developments.	*Compatible:* The development enabled on the Project site would incorporate bike lanes and routes into the street system. The Specific Plan's regional river trails allow for bicycle use and reduces the number of times

Table 8.0-50
Compatibility with California Attorney General GHG Emission Reduction Strategies

Measure	Compatibility of Project
	that bicycles would interact with motor vehicles. (The regional river trails span from the Los Angeles County line into the City of Santa Clarita.) Therefore, the proposed Project would further implementation of this reduction strategy.
Incorporate bicycle-friendly intersections into street design.	*Compatible:* As discussed above, the development enabled on the Project site would contain and connect to an extensive network of bike trails. The circulation plan has incorporated these 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:* The Project applicant has little or no control over whether future commercial businesses on the Project site will elect to provide bicycle parking near buildings. However, as discussed above, market forces will drive the provision of this bicycle parking. In addition, adopted Specific Plan air quality mitigation measures require that future commercial and business park uses be complemented by any two of the following: bicycle facility improvements; bicycle parking facilities; and/or showers for bicycling employees' use. 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 development enabled on 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.
Work with the school district to restore or expand school bus services.	*Compatible:* As discussed in **Section 4.18**, Education, of the Draft EIS/EIR, the Castaic Union School District (Castaic District) and the William S. Hart Union High School District (Hart District) currently provide public elementary, junior high/middle school, and senior high school education in the Project area. Both the Castaic District and Hart District provide bus services, with the latter's services derived from the City of Santa Clarita Transit. (See http://www.castaic.k12.ca.us/; http://www.santa-clarita.com/cityhall/admin/transit/school.asp.) The proposed Project would result in construction of the Landmark Village Elementary School, which would be designed for a capacity of 837 students and centrally located within Landmark Village (part of the Specific Plan area). Therefore, elementary school students may not require busing due to the walkability of Landmark Village and the proximity of this elementary school. In

Table 8.0-50
Compatibility with California Attorney General GHG Emission Reduction Strategies

Measure	Compatibility of Project
	summary, 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 development enabled on the Project site. In addition, consistent with Specific Plan mitigation measure 4.10-14, the sellers of new residential units would be required to distribute brochures and other relevant information published by SCAQMD (or a similar organization) to new homeowners regarding the importance of reducing vehicle miles traveled, as well as information on local opportunities for public transit and ridesharing. Therefore, the proposed Project would further implementation of this reduction strategy.

Notes:

[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, the goal of which is to achieve a long-term reduction in water demand of at least 10 percent over the next twenty years.

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

Table 8.0-51
Compatibility with Climate Action Team GHG Emission Reduction Strategies

GHG Emission Reduction Strategies	Compatibility of Project
California Air Resources Board (CARB)	
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:* The viability of CARB's AB 1493 regulations is uncertain in light of the USEPA's previous denial of California's Clean Air Act waiver application in December 2007. However, as previously discussed in this section, President Barack Obama has instructed the USEPA to reconsider its prior denial. To the extent that the waiver application is granted and the AB 1493 regulations are implemented, reductions would 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.

Table 8.0-51
Compatibility with Climate Action Team GHG Emission Reduction Strategies

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 4.20**, Solid Waste Services, of the Draft EIS/EIR, 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:* The development facilitated by the proposed Project would result in the planting of at least 35,000 new net trees in the Specific Plan area, 5,000 in the VCC planning area, and 2,500 in the Entrada planning, and the installation and maintenance of other landscaping throughout the site. In addition, as discussed in **Section 4.16**, Parks, Recreation, and Trails, of the Draft EIS/EIR, build-out of the Specific Plan will provide the following acreages of parks and Open Area: 10 public Neighborhood Parks totaling 55 acres; Open Areas totaling 1,106 acres, of which 186 acres are Community Parks; High Country Special Management Area of 4,214 acres; River Corridor Special Management Area of 819 acres; a 15-acre Lake; an 18-hole Golf Course; and, a trail system consisting of a Regional River Trail, Community Trails, and Unimproved Trails. In addition, the proposed Project would result a managed preserve comprised, in part, of a 1,517-acre portion of the Salt Creek watershed and wildlife corridor in Ventura County and the grant of a conservation easement to CDFG over approximately 167.6 acres of the applicant's land holdings in Los Angeles County. 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:* The development on the Specific Plan area enabled by the proposed Project would rely on less energy-intensive water resources than those typically used throughout California, due to the availability of local groundwater. In addition, to curtail urban runoff and maximize groundwater recharge, the development facilitated within the Project site would utilize open/soft bottom channels, increased native landscape areas, and non-structural water quality treatment improvements. Finally, the Project site would be vegetated with native (or non-native/non-invasive) and drought-tolerant plants, use recycled water for irrigation, and

Table 8.0-51
Compatibility with Climate Action Team GHG Emission Reduction Strategies

GHG Emission Reduction Strategies	Compatibility of Project
	evapotranspiration controllers to reduce potable water demand and runoff. Therefore, the proposed Project would further implementation of this reduction strategy.
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 facilitated by the proposed Project would be at least 15 percent more energy efficient than the existing standards adopted by the CEC in Title 24 (2005). On April 23, 2008, the CEC adopted the 2008 standards. If the building permit applications for the proposed Project are filed after July 1, 2009 (the effective implementation date for the 2008 standards), the development on the Project site would comply with Title 24 (2008), as required by law. 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 in the development facilitated by the proposed Project 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 development enabled on the Project site). 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 would result in mixed-use developments that employ sustainable development principles. Build-out within Newhall Ranch and Valencia would result in the creation of approximately 100,000 jobs in the Santa Clarita Valley, and thereby increase the jobs-housing balance. In addition, nearly 60 percent of the residential units within the Specific Plan would be located within walking distance of village or commercial centers. Further, the Specific Plan area would be part of the Santa Clarita Transit system, include extensive open space and recreation areas (including over 50 miles of trails), and preserve sensitive resources areas. Therefore, the proposed Project would further implementation of this reduction strategy.

Table 8.0-51
Compatibility with Climate Action Team GHG Emission Reduction Strategies

GHG Emission Reduction Strategies	Compatibility of Project
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 development facilitated by the proposed Project incorporates "transit friendly" project design features. For example, park-and-ride lots and bus stops would be provided. 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 the County of Los Angeles' 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 15 percent more energy efficient than Title 24 (2005) currently requires and, where specified, 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 (March 2006).

8.7 SUMMARY OF SIGNIFICANCE FINDINGS

Table 8.0-52 presents a summary of the significance findings with respect to each of the Project alternatives, and the reduced level of impact that could be achieved by applying appropriate mitigation measures.

Table 8.0-52
Summary of Significant Greenhouse Gas Emissions Impacts -- Pre- and Post-Mitigation

Significance Criterion	Applicable Mitigation Measures	Impact	Impacts of Alternatives -- Pre/Post-Mitigation						
			ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6	ALT 7
1	GCC-1; GCC-2; GCC-3; GCC-4; GCC-5; GCC-6; GCC-7	Direct	NS/NS	NS/NS	NS/NS	NS/NS	NS/NS	NS/NS	NS/NS
		Indirect	NS/NS	NS/NS	NS/NS	NS/NS	NS/NS	NS/NS	NS/NS
		Secondary	NS/NS	NS/NS	NS/NS	NS/NS	NS/NS	NS/NS	NS/NS

NS = Not significant or adverse. No mitigation required.

8.8 SIGNIFICANT UNAVOIDABLE IMPACTS

With implementation of the project design features and mitigation measures recommended in this section, no significant unavoidable project-related GHG emissions would result from approval of the proposed Project.