CHAPTER 3.0

ENVIRONMENTAL EFFECTS FOUND NOT TO BE SIGNIFICANT

SUBCHAPTER 3.1

EFFECTS FOUND NOT SIGNIFICANT AS PART OF THE EIR PROCESS

CHAPTER 3.0 – ENVIRONMENTAL EFFECTS FOUND NOT TO BE SIGNIFICANT

3.1 Effects Found Not Significant as Part of the EIR Process

3.1.1 Climate Change

Since certification of the 1981 Sycamore Springs and 1983 Hewlett Packard EIRs, global climate change (GCC) and greenhouse gas emissions (GHGs) have emerged as issues of environmental concern. HELIX prepared the Climate Change Analysis Report (2013c) to evaluate potential environmental impacts associated with the Proposed Project's emission of GHGs, and the effects of global climate change on the Proposed Project. The Climate Change Analysis Report is summarized in the following discussion, with the complete report included as Appendix H of this EIR.

3.1.1.1 *Existing Conditions*

Background

Global climate change is a change in the average weather of the earth, which can be measured by wind patterns, storms, precipitation, and temperature. The earth's climate is in a state of constant flux with periodic warming and cooling cycles. Extreme periods of cooling are termed "ice ages," which may then be followed by extended periods of warmth. For most of the earth's geologic history, these periods of warming and cooling have been the result of many complicated and interacting natural factors, including: volcanic eruptions which spew gases and particles (dust) into the atmosphere; the amount of water, vegetation, and ice covering the earth's surface; subtle changes in the earth's orbit; and the amount of energy released by the sun (sun cycles). Since the beginning of the Industrial Revolution around 1750, however, the average temperature of the earth has been increasing at a rate that is faster than can be explained by natural climate cycles alone.

With the Industrial Revolution came an increase in the combustion of carbon-based fuels such as wood, coal, oil, natural gas, and biomass. Industrial processes have also created emissions of substances that are not found in nature. This in turn has led to a marked increase in the emissions of gases that have been shown to influence the world's climate. These gases, termed "greenhouse" gases (GHG), influence the amount of heat that is trapped in the earth's atmosphere. Because recently observed increased concentrations of GHGs in the atmosphere are related to increased emissions resulting from human activity, the current cycle of "global warming" is generally believed to be largely due to human activity. Of late, the issue of global warming or global climate change has arguably become the most important and widely debated environmental issue in the U.S. and the world. Because climate change is caused by the collective of human actions taking place throughout the world, it is quintessentially a global or cumulative issue.

Global climate change refers to changes in Earth's temperature, wind patterns, precipitation and storms. Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO_2), methane (CH_4) nitrous oxide (N_2O), hydrofluorocarbons

(HFCs, such as HFC-23), perfluorocarbons (PFCs, such as CF_4), and sulfur hexafluoride (SF_6), which are known as GHGs.

The potential of a gas to trap heat and warm the atmosphere is measured by its global warming potential (GWP). GHGs either breakdown or are absorbed over time. Thus, the potential of a gas to contribute to global warming is limited by the time it is in the atmosphere, its "atmospheric lifetime." To account for these effects, GWPs are calculated over a 100-year time horizon (U.S. EPA 2010). Because of its relative abundance in the atmosphere and its relatively long atmospheric lifetime, carbon dioxide has been designated the reference gas for comparing GWPs. Thus, the 100-year GWP of CO_2 is equal to "one" and the GWP of other GHGs are expressed as multiples of the GWP of CO_2 (see Table 3.1.1-1, Global Warming Potentials and Atmospheric Lifetimes).

Types of GHGs

Water vapor is the most abundant and variable GHG in the atmosphere. It is not considered a pollutant; it maintains a climate necessary for life. The main source of water vapor is evaporation from the oceans (approximately 85 percent). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves.

CO_2 is an odorless, colorless, GHG. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic (human-caused) sources of CO_2 include the burning of fuels such as coal, oil, natural gas and wood. Concentrations are currently around 379 parts per million (ppm). Some scientists say that concentrations may increase to 1,130 CO_2 equivalent (CO_2e) ppm by 2100 as a direct result of anthropogenic sources (Intergovernmental Panel on Climate Change [IPCC] 2007). Some predict that this will result in an average global temperature rise of at least 7.2°Fahrenheit (°F) (IPCC 2007).

CH_4 is a gas and is the main component of natural gas used in homes. It has a GWP of about 21, or 21 times the GWP of CO_2. A natural source of CH_4 is from the decay of organic matter. Geological deposits known as natural gas fields contain CH_4, which is extracted for fuel. Other sources are from decay of organic material in landfills, fermentation of manure, and cattle digestion.

N_2O, also known as laughing gas, is a colorless gas and has a GWP of about 310. N_2O is produced by microbial processes in soil and water, including reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (e.g., nylon and nitric acid production) also emit N_2O. It is used in rocket engines, as an aerosol spray propellant, and in race cars. During combustion, NO_x (NO_x is a generic term for mono-nitrogen oxides, NO and NO_2) is produced as a criteria pollutant and is not the same as N_2O. Very small quantities of N_2O may be formed during fuel combustion by nitrogen and oxygen.

Fluorocarbons are gases formed synthetically by replacing all hydrogen atoms in CH_4, or ethane, with chlorine and/or fluorine atoms. Chlorofluorocarbons are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at Earth's surface).

Chlorofluorocarbons were first synthesized in 1928 for use as refrigerants, aerosol propellants and cleaning solvents. They destroy stratospheric ozone; therefore, their production was stopped by requirements of the Montreal Protocol. Fluorocarbons have a GWP of between 140 and 11,700, with the lower end being for HFC-152a and the higher end being for HFC-23.

SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It has the highest GWP of any gas – 23,900. SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Ozone is a GHG, although unlike the other GHGs, it is relatively short-lived in the troposphere and, therefore, is not global in nature. According to CARB, it is difficult to make an accurate determination of the contribution of ozone precursors (NO_X and Volatile Organic Compounds [VOCs]) to global warming (CARB 2006).

A summary of the most common naturally occurring and artificial GHGs is provided in Table 3.1.1-1. Of the gases listed in Table 3.1.1-1, CO_2, CH_4 and N_2O, are produced by both natural and anthropogenic (human) sources. The remaining gases, HFCs, CFs, and SF_6, are the result of solely human processes.

Regulatory Framework

All levels of government have some responsibility for the protection of air quality, and each level (international, federal, state, and regional/local) has specific responsibilities relating to air quality regulation. GHG emissions and the regulation of GHGs is a relatively new component of air quality.

International Greenhouse Gas Legislation

Montreal Protocol

The Coordinating Committee on the Ozone Layer was established by the United Nations Environment Program (UNEP) in 1977, and UNEP's Governing Council adopted the World Plan of Action on the Ozone Layer in 1977. Continuing efforts led to the signing of the Vienna Convention on the Protection of the Ozone Layer in 1985. This in turn led to the creation of the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol), an international treaty designed to protect the stratospheric ozone layer by phasing out production of ozone-depleting chemicals (ODCs). The Montreal Protocol was adopted on September 16, 1987 and became effective on January 1, 1989.

By the end of 2006, the 191 parties to the treaty had phased out over 96 percent of ODCs (UNEP 2007). Because of this success, scientists are now predicting that the ozone hole will "heal" later this century (UNEP 2007). The substantial reduction of ODCs also has benefits relative to GCC because these substances are potent GHGs. As noted, however, the phasing out of the ODCs has led to increased use of non-ozone depleting substances, such as HFCs, which, although not detrimental to the ozone layer, also are potent GHGs.

United Nations Framework Convention on Climate Change

The U.S. participates in the United Nations Framework Convention on Climate Change (UNFCCC), which was signed on March 21, 1994. The Kyoto Protocol is a treaty adopted under the UNFCCC, and was the first international agreement to regulate GHG emissions. It has been estimated that if the commitments outlined in the Kyoto Protocol are met, global GHG emissions could be reduced by an estimated five percent from 1990 levels during the first commitment period of 2008 to 2012. Notably, while the U.S. is a signatory to the Kyoto Protocol, Congress has not ratified the Protocol and the U.S. is not bound by the Protocol's commitments.

In December 2009, the United Nations representatives met in Copenhagen to attempt to develop a framework for addressing global climate change issues in the future. The Copenhagen Accord was not ratified with a binding accord, however, and no further measures were adopted at that meeting.

Federal Greenhouse Gas Regulations

In the past, the USEPA has not regulated GHGs under the CAA. The U.S. Supreme Court, however, ruled on April 2, 2007 (in Massachusetts v. U.S. Environmental Protection Agency) that CO_2 is an air pollutant, as defined under the CAA, and that the USEPA has the authority to regulate GHG emissions. After a thorough examination of the scientific evidence and careful consideration of public comments, the USEPA announced on December 7, 2009 that GHGs threaten the public health and welfare of the American people (with the associated findings summarized below):

- Endangerment Finding: The USEPA Administrator finds that the current and projected concentrations of the six key well-mixed GHGs (CO_2, CH_4, N_2O, HFC, PFC, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations.

- Cause or Contribute Finding: The USEPA Administrator finds that the combined emissions of these well-mixed GHGs from motor vehicles and motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

The endangerment findings do not themselves impose any requirements on industry or other entities. This action was a prerequisite to the final USEPA's GHG emissions standards for light duty vehicles, which were jointly implemented by the USEPA and the U.S. Department of Transportation's National Highway Safety Administration on April 1, 2010.

Mandatory Reporting Rule of GHGs

On January 1, 2010, the USEPA started requiring large emitters of heat-trapping emissions to collect GHG data under a new reporting system. This new program covers approximately 85 percent of the nation's GHG emissions and applies to roughly 10,000 facilities. Fossil fuel and industrial GHG suppliers, motor vehicle and engine manufacturers, and facilities that emit 25,000 metric tons or more of CO_2 equivalent (CO_2e) per year, are required to report GHG emissions data to the EPA annually. This reporting threshold is equivalent to the annual GHG

emissions from approximately 4,600 passenger vehicles. Vehicle and engine manufacturers outside of the light-duty sector began phasing in GHG reporting with vehicle/engine model year 2011.

Corporate Average Fuel Economy Standards

The federal Corporate Average Fuel Economy (CAFE) standard determines the fuel efficiency of certain vehicle classes in the U.S. In 2007, as part of the Energy and Security Act of 2007, CAFE standards were increased to require new light-duty vehicles to meet an average fuel economy of 35 miles per gallon (mpg) by 2020. In May 2009, President Obama announced plans to increase CAFE standards to require light-duty vehicles to meet 35.5 mpg by 2016.

Prevention of Significant Deterioration/Title V Greenhouse Gas Tailoring Rule

The USEPA will apply a tailored approach to the applicability of major source thresholds for GHGs under the Prevention of Significant Deterioration (PSD) and Title V programs of the CAA by temporarily raising those thresholds and setting a PSD significance level for GHGs. The USEPA is anticipating that GHG emissions may soon be subject to regulation pursuant to the CAA. One consequence of subjecting GHG emissions to regulatory controls is that the requirements of existing air permit programs, namely the PSD preconstruction permitting program for major stationary sources and the Title V operating permits program, would be triggered for GHG emission sources. At the current applicability levels under the CAA, tens of thousands of projects every year would need permits under the PSD program, and millions of sources would become subject to the title V program. These numbers of permits are orders of magnitude greater than the current number of permits under these permitting programs and would vastly exceed the administrative capacity of the permitting authorities. By tailoring the applicability thresholds, actions can be taken by the EPA and states to build capacity and streamline permitting.

California Greenhouse Gas Regulations

California Code of Regulations, Title 24, Part 6

California Code of Regulations, Title 24, Part 6, is the California Energy Code. This code, originally enacted in 1978 in response to legislative mandates, establishes energy efficiency standards for residential and non-residential buildings to reduce California's energy consumption. The code is updated periodically to incorporate and consider new energy efficiency technologies and methodologies as they become available. The 2008 Standards went into effect January 1, 2010**,** and supersede the 2005 Standards. Projects that apply for a building permit on or after this date must comply with the 2008 Standards. The Building Energy Efficiency Standards will continue to be upgraded over time to reduce electricity and peak demand, and California recognizes the role of the Standards in reducing energy related to meeting the state's water needs and in reducing GHG emissions.

California Code of Regulations, Title 24, Part 11

California Code of Regulations, Title 24, Part 11, outlines the CalGreen code. The CalGreen code aims to make building designs more sustainable, and to incorporate more efficient and responsible practices into development. This code is intended to: reduce energy and water consumption; cause a reduction in GHG emissions from buildings; promote environmentally responsible, cost-effective, and healthier places to work and live; and respond to directives by the Governor. According to the California Air Resources Board, an estimated three-million metric ton reduction of greenhouse gases will occur by the year 2020 as a result of the mandatory provisions in the code. This number is expected to increase in the future, as it will apply to nonresidential additions and alterations. The current 2010 CalGreen Standards went into effect January 1, 2011. Prior to the updated 2010 edition, this code contained only voluntary standards. The 2010 version of the standards include both mandatory and voluntary standards related to the design and construction of buildings, as well as construction site management. A supplement to this code (effective July 1, 2012) modifies some of the incorporated provisions (both voluntary and mandatory) of the previously approved 2010 edition.

Executive Order D-16-00

This executive order (EO) was signed by Governor Gray Davis on August 2, 2000, and established a statewide sustainable building goal. Specifically, this goal is to "site, design, deconstruct, construct, renovate, operate, and maintain state buildings that are models of energy, water, and materials efficiency; while providing healthy, productive and comfortable indoor environments and long term benefits to Californians." As with the California Energy Code, reductions in energy usage provided by sustainable building design would result in reduced GHG emissions.

Senate Bill 1771

Senate Bill (SB) 1771 (Sher) was enacted on September 30, 2000, and requires the Secretary of the Resources Agency to establish a nonprofit public benefit corporation, to be known as the "California Climate Action Registry," for the purpose of administering a voluntary GHG emission registry. The Energy Commission is required to develop metrics for use by the Registry and to update the state's inventory of GHG emissions by January 1, 2002, and every five years thereafter.

Executive Order S-7-04

This EO, signed by Governor Schwarzenegger on April 20, 2004, designated California's 21 interstate freeways as the "California Hydrogen Highway Network," and directed the CalEPA and all other relevant state agencies to "plan and build a network of hydrogen fueling stations along these roadways and in urban centers that they connect, so that by 2010, every Californian will have access to hydrogen fuel, with a significant and increasing percentage from clean, renewable sources."

The EO also directed the CalEPA, in concert with the State Legislature and in consultation with the California Energy Commission [CEC] and other relevant state and local agencies, to develop California Hydrogen Economy Blueprint Plan by January 1, 2005. The plan is to be updated biannually, with recommendations to the Governor and State Legislature to include the following:

> Promoting environmental benefits (including global climate change) and economic development opportunities resulting from increased utilization of hydrogen for stationary and mobile applications; policy strategies to ensure hydrogen generation results in the lowest possible emissions of GHGs and other air pollutants.

Executive Order S-3-05

EO S-3-05, signed by Governor Schwarzenegger on June 1, 2005, calls for a reduction in GHG emissions to 1990 levels by 2020, and for an 80 percent reduction in GHG emissions below 1990 levels by 2050.

EO S-3-05 also calls for the CalEPA to prepare biennial science reports on the potential impact of continued global warming on certain sectors of the California economy. The first of these reports, "Scenarios of Climate Change in California: An Overview," was published in February 2006. The 2006 report used a range of emissions scenarios developed by the Intergovernmental Panel on Climate Change (IPCC) to project a series of potential warming ranges (i.e., temperature increases) that may occur in California during the 21st century. Specifically, these include a lower warming range (3.0 to 5.5°F); medium warming range (5.5 to 8.0°F); and higher warming range (8.0 to 10.5°F). The report then presents analyses of future climate in California under each warming range.

As noted above, each emissions scenario would result in substantial temperature increases for California. According to the report, these substantial temperature increases would result in a variety of impacts to the people, economy, and environment of California in association with a projected increase in extreme conditions. While the severity of these impacts would depend upon actual future emissions of GHGs and associated warming, identified potential impacts from global warming in California include, but are not limited to, public health, biology, rising sea levels, hydrology and water quality, and water supply.

Assembly Bill 32 – Global Warming Solution Act of 2006

In the fall of 2006, Governor Schwarzenegger signed California Assembly Bill (AB) 32, the Global Warming Solutions Act, into law. AB 32 required CARB to determine what the statewide GHG emissions level was in 1990, and to approve a statewide GHG emissions limit equivalent to that level. The determination of a statewide 1990 GHG levels was required to be completed by January 1, 2008, with the related emissions limit to be achieved by 2020. Key AB 32 milestones include:

- June 20, 2007 – Identification of "discrete early action GHG emission reduction measures."

- January 1, 2008 – Identification of 1990 baseline GHG emission levels and approval of a statewide limit equivalent to that level. Adoption of reporting and verification requirements concerning GHG emissions.
- January 1, 2009 – Adoption of a scoping plan for achieving GHG emission reductions.
- January 1, 2010 – Adoption and enforcement of regulations to implement the "discrete" actions.
- January 1, 2011 – Adoption of GHG emission limits and reduction measures by regulations.
- January 1, 2012 – GHG emission limits and reduction measures adopted in 2011 become enforceable.

Since the passage of AB 32, CARB published Proposed Early Actions to Mitigate Climate Change in California (2007c). There are no early action measures specific to development projects included in the list of 36 measures identified for CARB to pursue during calendar years 2007, 2008, 2009, and 2010. Also, this publication indicated that the issue of GHG emissions in CEQA and General Plans was being deferred for later action, so the publication did not discuss any early action measures generally related to CEQA or to land use decisions.

CARB has determined that the 1990 level of GHG emissions was 427 million metric tons (MMT) of CO_2e emissions (CARB 2007d). CARB estimated that a reduction of 169 MMT net CO_2e emissions below "business as usual" (BAU) levels of 596 MMT would be required by 2020 to meet 1990 levels. This amounts to a 15 percent reduction from today's levels, and a 28.3 percent reduction from projected BAU levels in 2020. Furthermore, CARB has initiated a series of "early action measures" to reduce GHG emissions in advance of the full implementation of AB 32 in 2012 (CARB 2007e). CARB also adopted its Scoping Plan in December 2008, which provided estimates of the year 1990 GHG emissions level, and identified sectors for the reduction of GHG emissions.

According to the CEC, transportation accounted for approximately 41 percent of California's GHG emissions in 2004 (CEC 2006). Growth in California has resulted in vehicle miles traveled (VMT) by state residents increasing three-fold during the period of 1975 to 2004. To reduce the use of carbon-based fuels, Governor Schwarzenegger signed EO S-01-07, calling for a 10 percent reduction in carbon intensity in fuels by 2020. In addition, President Bush signed new fuel efficiency standards (CAFE standards) that would increase vehicle mileage to 35 miles per gallon by 2020. All of these measures are designed to reduce emissions of GHGs.

In March 2011, a San Francisco Superior Court enjoined the implementation of CARB's Scoping Plan, finding the alternatives analysis and public review process violated both CEQA and CARB's certified regulatory program (*Association of Irritated Residents, et al v. California Air Resources Board*, Case No. CPF-09-509562, March 18, 2011). In response to this litigation, CARB adopted the new CEQA document (*Final Supplement to the AB32 Scoping Plan Functional Equivalent Document*) on August 24, 2011. CARB staff re-evaluated the baseline in light of the economic downturn and updated the projected 2020 emissions to 545 MMT CO_2e. Two reduction measures (Pavley I and the Renewables Portfolio Standard [12 to 20 percent]) not previously included in the 2008 Scoping Plan baseline were incorporated into the updated baseline, further reducing the 2020 Statewide emissions projection to 507 MMT CO_2e. The

updated forecast of 507 MMT CO_2e is referred to as the AB 32 2020 baseline. Reduction of an estimated 80 MMT CO_2e is necessary to reduce Statewide emissions to the AB 32 target of 427 MMT CO_2e by 2020 (CARB 2011).

Assembly Bill 1493 – Vehicular Emissions of Greenhouse Gases

In a response to the transportation sector's CO_2 emissions, AB 1493 (Pavley) was enacted on July 22, 2002. AB 1493 requires CARB to set statewide GHG emission standards for passenger vehicles and light duty trucks (and other vehicles determined to be vehicles whose primary use is noncommercial personal transportation) manufactured in model year 2009 and all subsequent model years. These standards were adopted in September 2004, and considered cost effectiveness, technological feasibility, and economic impacts. When fully phased in, the near-term (2009 to 2012) standards would reduce GHG emissions by approximately 22 percent compared to the emissions from the 2002 fleet, while the mid-term (2013 to 2016) standards would result in a reduction of approximately 30 percent. Some currently used technologies that achieve GHG reductions include small engines with superchargers, continuously variable transmissions, and hybrid electric drives. To set its own GHG emissions limits on motor vehicles, California required a waiver from the USEPA, and this waiver was issued in June 2009. With this action, it was expected in 2008 that the new regulations (Pavley I and II) would reduce GHG emissions from California passenger vehicles by about 18 percent statewide.

Assembly Bill 75

AB 75 was passed in 1999, and mandates state agencies to develop and implement an integrated waste management plan to reduce GHG emissions related to solid waste disposal and diversion (recycling). In addition, the bill mandates that community service districts providing solid waste services report the disposal and diversion information to the appropriate city, county, or regional jurisdiction. Since 2004, the bill requires diversion of at least 50 percent of the solid waste from landfills and transformation facilities, with submittal of an annual report describing the diversion rates to the California Integrated Waste Management Board.

Senate Bill 1368

In 2006, the California Legislature passed SB 1368, which requires the Public Utilities Commission (PUC) to develop and adopt a "GHGs emission performance standard" by February 1, 2007 for the private electric utilities under its regulation. The PUC adopted an interim standard on January 25, 2007, but has formally requested a delay for the local publicly owned electric utilities under its regulation. On November 14, 2011, the Natural Resources Defense Council (NRDC) and Sierra Club jointly filed a Petition requesting the CEC initiate a rulemaking proceeding to ensure the current practices of California publicly owned utilities (POUs) meet the requirements of Senate Bill 1368 and California's Emission Performance Standard. On January 12, 2012, the CEC adopted the Emission Performance Standard. These standards apply to all long-term financial commitments (five years or longer) entered into by electric utilities and the emissions must be limited to 1,100 pounds of CO_2 per megawatt-hour of electricity delivered (California SB 2006).

Senate Bill 1505

Largely in response to EO S-7-04, SB 1505 (Lowenthal) requires CARB to adopt regulations by July 1, 2008 that ensure the production and use of hydrogen fuel for transportation purposes, thereby contributing to the reduction of GHG emissions, criteria air pollutants, and toxic air contaminants. SB 1505 was passed by the legislature and signed by the governor on September 30, 2006.

Executive Order S-01-07

This EO was signed by Governor Schwarzenegger on January 18, 2007 and directs that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. It orders that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California, and directs CARB to determine if an LCFS can be adopted as a discrete early action measure pursuant to AB 32. The CARB approved the LCFS as a discrete early action item with a regulation adopted and implemented in 2010. It was expected to result in a reduction of 15 MMT CO_2e by 2020 (based on the original 2008 Scoping Plan estimates). On December 29, 2011, District Judge Lawrence O'Neill in the Eastern District of California issued a preliminary injunction blocking CARB from implementing LCFS for the remainder of the *Rocky Mountain Farmers Union* litigation. Plaintiffs argued that the LCFS is unconstitutional because it violates the interstate commerce clause, which was intended to stop states from introducing laws that would discriminate against businesses located in other states.

In January 2012, however, CARB appealed that decision to the Ninth Circuit Court of Appeals (Ninth Circuit), and then moved to stay the injunction pending resolution of the appeal. On April 23, 2012, the Ninth Circuit granted the CARB's motion for a stay of the injunction while it continues to consider CARB's appeal of the lower court's decision. Therefore, the LCFS enforcement injunction is lifted, and CARB is continuing to implement the LCFS statewide.

Senate Bill 97 – CEQA: Greenhouse Gas Emissions

In August 2007, Governor Schwarzenegger signed into law SB 97 – CEQA: Greenhouse Gas Emissions, stating: "This bill advances a coordinated policy for reducing GHG emissions by directing the Office of Planning and Research (OPR) and the Resources Agency to develop CEQA guidelines on how state and local agencies should analyze, and when necessary, mitigate GHG emissions." Specifically, SB 97 requires OPR to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, including but not limited to, effects associated with transportation or energy consumption. The Resources Agency certified and adopted the guidelines on December 31, 2009. The new CEQA guidelines provide the lead agency with broad discretion in determining what methodology is used in assessing the impacts of GHG emissions in the context of a particular project. This guidance is provided because the methodology for assessing GHG emissions is expected to evolve over time. Although the new CEQA Guidelines did not establish a threshold of significance, the OPR guidance also states that the lead agency can rely on qualitative or other performance-based standards for estimating the significance of GHG emissions.

Senate Bill 375

SB 375 was signed and passed into law on September 30, 2008 to enhance CARB's ability to reach AB 32 goals. Specifically, SB 375 requires CARB to set regional targets for the purpose of reducing GHG emissions from passenger vehicles for 2020 and 2035. If regions develop integrated land use, housing and transportation plans that meet the SB 375 targets, new projects in these regions can be relieved of certain CEQA review requirements. The targets apply to the regions in the state covered by 18 Metropolitan Planning Organizations (MPOs).

In accordance with SB 375, on January 23, 2009 CARB appointed a Regional Targets Advisory Committee (RTAC) to provide recommendations and methodologies to be used in the CARB's target setting process. The RTAC provided its recommendations in a report to the CARB on September 29, 2009. CARB released their draft targets on June 30, 2010, and adopted their final targets on September 23, 2010. For the San Diego area, CARB and SANDAG agreed to adopt 7 percent and 13 percent in per capita GHG emission reductions from passenger vehicles by the years 2020 and 2035, respectively. If MPOs had not met the GHG reduction targets, transportation projects would not have been eligible for funding programmed after January 1, 2012.

On December 4, 2012, Superior Court ruled that SANDAG violated state law by failing to fully account for, and take steps to reduce, climate change in its environmental review of the region's long-term transportation plan. At the time of this writing, the plan is being revised.

Executive Order S-13-08

EO S-13-08, signed by Governor Schwarzenegger on November 14, 2008, enhances the state's management of climate impacts from sea level rise, increased temperatures, shifting precipitation and extreme weather events. One key benefit of EO S-13-08 is that it has facilitated California's first comprehensive climate adaptation strategy. This strategy will improve coordination within state government so that better planning can more effectively address climate impacts to human health, the environment, the state's water supply and the economy. Another benefit of EO S-13-08 includes providing consistency and clarity to state agencies on how to address sea level rise in current planning efforts; reducing time and resources unnecessarily spent on developing different policies using different scientific information.

California Greenhouse Gas Programs and Plans

California Energy Commission: New Solar Homes Partnership

The New Solar Homes Partnership (NSHP) is a component of the California Solar Initiative, and has a goal to produce 400 megawatts of solar electricity on approximately 160,000 homes by 2017. To qualify for the program, a new home must achieve energy efficiency levels greater than the requirements of the 2005 Building Title 24 Standards. The builder can choose to comply with either of two tiers of energy efficiency measures: Tier I, which requires a 15 percent reduction from Title 24 Standards; or Tier II, which requires a 35 percent reduction overall and a 40 percent reduction in the building's space cooling (air conditioning) energy compared to Title 24 (CEC 2008). In addition, all appliances must have an Energy Star rating, which

indicates that the appliance is consistent with the international standard for energy efficient consumer products.

California Air Resources Board: Interim Significance Thresholds

In October 2008, CARB released draft interim guidance on significance thresholds for industrial, commercial, and residential projects (CARB 2008b). The draft proposal for residential and commercial projects states that a project would not be significant if it complies with a previously approved plan that addresses GHG emissions, or meets an energy use performance standard defined as CEC's Tier II Energy Efficiency goal (specified as 35 percent above Title 24 requirements). CARB, however, did not define performance standards for water, waste, and transportation; or develop threshold for GHG emissions in tons per year in the interim guidance. Work efforts were suspended on January 22, 2009, prior to identification of a threshold of significance.

California Air Resources Board: Scoping Plan

On December 11, 2008, CARB adopted a Scoping Plan (CARB 2008a), as directed by AB 32. The Scoping Plan proposes a set of actions designed to reduce overall GHG emissions in California to the levels required by AB 32. The measures in the Scoping Plan approved by CARB are in place as of 2012, with further implementation details and regulations to be developed, followed by the rulemaking process to meet the 2012 deadline. Measures applicable to development projects include the following:

- Maximum energy efficiency building and appliance standards, including more stringent building codes and appliance efficiency standards, and solar water heating;
- Use of renewable sources for electricity generation, such as photovoltaic solar associated with the Million Solar Roofs program;
- Regional transportation targets, including integration of development patterns and the transportation network to reduce vehicle travel, as identified in SB 375; and
- Green Building strategy, including siting near transit or mixed use areas; zero-net-energy buildings; "beyond-code" building efficiency requirements; and the use of the CEC's Tier II Energy Efficiency goal.

Relative to transportation, the Scoping Plan includes nine measures or recommended actions. One of these is measure T-3, Regional Transportation-Related GHG Targets, which relies on SB 375 implementation to reduce GHG emissions from passenger vehicles through reducing VMT. The other measures are related to vehicle GHG emissions, fuel, and efficiency measures and would be implemented statewide rather than on a project-by-project basis.

In order to assess the scope of the reductions needed to return to 1990 emissions levels, CARB first estimated 2020 BAU GHG emissions. These are the GHG emissions that would be expected to occur in the absence of any state GHG reduction measures. In 2008, after estimating that statewide 2020 BAU GHG emissions would be 596 metric tons, CARB developed a Scoping Plan that identified measures to reduce BAU emissions by approximately 174 metric tons (an approximately 29 percent reduction) by 2020. As indicated in Table 3.1.1-2, CARB Scoping

Plan Recommended GHG Reduction Measures, the majority of reductions are directed at the sectors with the largest GHG emissions contributions (transportation and electricity generation) and involve statutory mandates affecting vehicle or fuel manufacture, public transit, and public utilities.

As noted above, CARB's revised estimate reflecting the economic downturn and other factors calculated that BAU 2020 emissions would be approximately 507 MMT CO_2e per year. Thus, in order to reach the 1990 emissions level of 427 MMT CO_2e, an 80 MMT CO_2e (16 percent) reduction was determined to be needed by 2020 (CARB 2011).

It was expected that the new regulations (Pavley I) would reduce GHG emissions from California passenger vehicles by about 31.7 MMT CO_2e (or 18 percent) counted toward the total statewide reduction target (CARB 2008) (see Table 3.1.1-2). However, the revised 2011 projections estimate that Pavley I will reduce GHG emissions from passenger vehicles by about 29.9 MMT CO_2e (or 17 percent), for 37 percent of the total 80 MMT CO_2e reduction target.

CARB has adopted a second, more stringent, phase of the Pavley regulations, termed "Pavley II" [now known as "Low Emission Vehicle (LEV) III"], that covers model years 2017 to 2025. Pavley II was estimated in 2008 to add an additional 4.0 MMT CO_2e for 2 percent of the then-estimated 174 MMT CO_2e reduction total. The revised 2010 projections estimate that Pavley II will reduce GHG emissions from passenger vehicles by 3.8 MMT CO_2e, for 5 percent of the total 80 MMT CO_2e reduction target (per CARB's 2010 revised projections). These reductions are to come from improved vehicle technologies such as small engines with superchargers, continuously variable transmissions, and hybrid electric drives.

A 18 percent reduction in the intensity of transportation fuels is expected to equate to a reduction of 16.5 MMT CO_2e in 2020 (based on the original 2008 Scoping Plan estimates). However, in order to account for possible overlap of benefits between LCFS and the Pavley GHG standards, CARB has discounted the contribution of LCFS to 15 MMT CO_2e (CARB 2008).

Local Policies and Plans: County of San Diego

County of San Diego General Plan

The County 2011 General Plan includes a plan to balance population growth and development with infrastructure needs and resource protection. The General Plan is based on smart growth and land planning principles that will reduce VMT, and thus result in a reduction of GHGs. This will be accomplished by locating future development within and near existing infrastructure. The General Plan also includes an implementation plan related to the reduction of GHGs, including the following actions:

- Preparation of a climate change action plan based on this inventory and emissions reduction targets for GHG emissions from all sources (adopted June 2012);
- Development of regulations and procedures to encourage the design and construction of new buildings in accordance with "green building" programs; and
- Development of regulations that encourage the use of energy recovery, as well as photovoltaic and wind energy in appropriate areas.

Specifically, the General Plan directs population capacity to the western portions of the County and reduces the potential for growth in the eastern areas. The general population distribution is intended to: (1) facilitate efficient, orderly growth by containing development within areas potentially served by SDCWA and in proximity to existing infrastructure; (2) protect natural resources through the reduction of population capacity in sensitive areas; (3) reduce overall VMT and associated GHG emissions that contribute to climate change; and (4) retain or enhance the character of communities within the unincorporated County.

County of San Diego: The Climate Action Plan

The County of San Diego developed and adopted (June 2012) the Climate Action Plan (CAP) to address the issues of climate change as it relates to growth in the County, and to protect the environment for visitors and residents alike. The plan will help reduce traffic congestion and solid waste generation, improve air quality, increase safety for pedestrians and cyclists, and encourage more efficient use of energy and water. Additionally, the CAP requires meaningful GHG reductions, in accordance with the guidelines of AB 32, the governor's executive order S-305, and CEQA guidelines, which will help improve the quality of life in the County. The implementation of the CAP will also help lead agencies to assess cumulative impacts of a project, and provide a means for future projects to address GHG impacts under CEQA in accordance with the 2011 statement by the Attorney General. A lead agency may conclude that a project's GHG impact is not cumulatively significant if the project demonstrates consistency with this CAP (CEQA Guidelines Section 15183.5[h][3]), thereby reducing overall project costs.

The CAP incorporates County goals related to climate change outlined in the General Plan and the 2009 County Strategic Energy Plan (SEP), and attempts to define a long-term strategy to tackle climate change. The CAP defines a baseline GHG inventory, utilizing 2005 for the County's unincorporated communities and 2006 for local government operations. The baseline is established in order to provide a starting point for the formation of emissions-reduction targets. Future projections of GHG emissions were determined for 2020, 2035 and 2050, along with the accompanying reduction goals. The CAP includes more specific approaches for the actions discussed in the General Plan, and outlines measures which would help the region attain the reduction goals. It details what specifically should be done, along with the community participation level required to see actual results.

San Diego Association of Governments: Climate Action Strategy

The SANDAG Climate Action Strategy serves as a guide to help policymakers address climate change as they make decisions to meet the needs of growing populations, as well as to maintain and enhance quality of life, and promote economic stability (SANDAG 2010). The purpose of the strategy is to identify land use, transportation, and other related policy measures that could reduce GHG emissions from passenger cars and light-duty trucks as part of the development of the Sustainable Communities Strategy for the 2050 Regional Transportation Plan, in compliance with SB 375. Additional policy measures are identified for buildings and energy use, protecting transportation and energy infrastructures from climate impacts, and assisting SANDAG and other local agencies in reducing GHG emissions from their operations.

Existing Greenhouse Gas Emission Levels

Worldwide GHG Inventory

The IPCC has concluded that a stabilization of GHGs at 400 to 450 ppm CO_2e concentration is required to keep global mean warming below 3.6ºF. This is projected to be the threshold necessary to avoid dangerous climate change (Association of Environmental Professionals 2007).

In 2004, total GHG emissions worldwide were estimated at 20,135 MMT CO_2e (UNFCCC 2006). The U.S. contributed the largest portion (35 percent) of global GHG emissions in 2004. The CEC (2006a) identifies the following breakdown of GHG emissions in California: approximately 84 percent of CO_2, 5.7 percent of CH_4, 6.8 percent of N_2O, and 2.9 percent of other pollutants. As noted above, the transportation sector is the single largest category of California's GHG emissions, accounting for 41 percent of statewide emissions. CARB estimates that the 1990 statewide CO_2e emissions level was 427 MMT (CARB 2007d). In 2004, California produced 492 MMT CO_2e emissions. The total U.S. GHG emissions was 7,260 MMT CO_2e emissions in 2005, of which 84 percent was CO_2 (USEPA 2006). On a national level, approximately 33 percent of GHG emissions were associated with transportation and about 41 percent were associated with electricity generation (USEPA 2006).

State and Regional GHG Inventory

CARB performed statewide inventories for the years 1990 to 2008. The inventory was divided into nine broad sectors of economic activity, including agriculture, commercial, electricity generation, forestry, high GWP emitters, industrial, recycling and waste, residential, and transportation. Emissions are quantified in million metric tons of CO_2 equivalent (MMT CO_2e).

The statewide GHG source emissions totaled 433 MMT CO_2e in 1990, 458 MMT CO2e in 2000, 484 MMT CO_2e in 2004, and 478 MMT CO_2e in 2008. According to data from the CARB, it appears that statewide GHG emissions peaked in 2004, and are now beginning to decrease (CARB 2010a). Transportation-related emissions consistently contribute the most GHG emissions, followed by electricity generation and industrial emissions.

The forestry sector is unique because it not only includes emissions associated with harvest, fire, and land use conversion (sources), but also includes removals of atmospheric CO_2 (sinks) by photosynthesis, which is then bound (sequestered) in plant tissues. As shown in Table 3.1.1-2, forestry sector consistently removes more CO_2 from the atmosphere statewide than it emits. As a result, although decreasing over time, this sector represents a net sink, removing a net 6.7 MMT CO_2e from the atmosphere in 1990, a net 4.7 MMT CO_2e in 2000, a net 4.3 MMT CO_2e in 2004, and a net 4.0 MMT CO_2e in 2008.

A San Diego regional emissions inventory was prepared by the University of San Diego School of Law, Energy Policy Initiative Center (EPIC) that took into account the unique characteristics of the region. According to the EPIC inventory, San Diego County emitted 34 MMT CO_2e emissions in 2006. The largest contributor of GHGs in the County was on-road transportation (46 percent or 16 MMT CO_2e). The second highest contributor was electricity, which

contributed 9 MMT CO_2e (25 percent). Together, the on-road transportation and electricity categories comprised 71 percent of the total GHG emissions for the County. The remaining amount was contributed by natural gas consumption, civil aviation, industrial processes, off-road equipment, waste, agriculture, rail, water-borne navigation, and other fuels. By 2020, regional GHG emissions are expected to be 43 MMT CO_2e (a 26 percent increase over 2006 levels and a 48 percent increase over 1990 levels).

On-Site GHG Inventory

In its largely vacant state, the Project site is not a source of GHG emissions. Natural vegetation and soils temporarily store carbon as part of the terrestrial carbon cycle. Carbon is assimilated into plants as they grow, and then dispersed back into the environment when they die. Soil carbon accumulates from inputs of plants, roots, and other living components of the soil ecosystem (i.e., bacteria, worms, etc.). Soil carbon is lost through biological respiration, erosion, and other forms of disturbance. Existing GHG emissions are considered negligible.

3.1.1.2 *Analysis of Project Effects and Determination as to Significance*

The following GHG analysis does not make a distinction between on- and off-site Project effects because GHG emissions attributable to such impacts would occur within the SDAB regardless of their location. With regard to operational GHG emissions, the analysis generally evaluates the worst-case of the two land use scenarios. If there are substantive differences between **Scenarios 1** and **2**, both land use scenarios are analyzed.

Greenhouse Gas Emissions

Guideline for the Determination of Significance

The Proposed Project would have a cumulatively considerable contribution to climate change impacts if it would:

1. Result in a net increase of construction and operational greenhouse gas emissions, either directly or indirectly, and if the project would incorporate mitigation that achieves less than a 16 percent total reduction compared to unmitigated emissions.

Guideline Source

This guideline is based on the County's Guidelines for Determining Significance for Climate Change (County of San Diego 2012).

The 16 percent threshold is based on current adjustments to the 2008 Scoping Plan forecasts for 2020 that adjusted the quantities of reductions coming from the Scoping Plan GHG reduction measures. Per the County's draft GHG guidelines, unmitigated project GHG emissions attributable to a project at full buildout in 2020 are compared to project GHG emissions with mitigation. "Unmitigated" GHG emissions assume a project complying with applicable standards and regulations. This would include effects on energy emissions due to current energy

code enforcements and the RPS (to 20 percent). In other words, electricity and natural gas emissions reductions (on the order of 15 percent) due to stricter energy efficiency standards in the current 2008 Title 24 energy code are accounted for in the emissions estimate and improvements over the 2008 code can be credited toward mitigated emissions.

Project mitigation identified toward the 16 percent requirement thus cannot also include the effects of the Pavley I or the 20 percent RPS because these programs are already included in the calculations that support the 16 percent reduction requirement. Other statewide measures, however, can be included without risk of double counting. This includes the RPS beyond 20 percent (up to 33 percent), LCFS, and Pavley II, all of which can be included toward the minimum 16 percent mitigation requirement for a project with mitigation.

Analysis

Effects of Climate Change

The increase in the earth's temperature is expected to have wide ranging effects on the environment. Although global climate change is anticipated to affect all areas of the globe, there are numerous implications of direct importance to California. Statewide average temperatures are anticipated to increase by between 3 and 10.5° F by 2100. Some climate models indicate that this warming may be greater in the summer than in the winter. This could result in widespread adverse impacts to ecosystem health, agricultural production, water use and supply, and energy demand. Increased temperatures could reduce the Sierra Nevada snowpack and put additional strain on the state's water supply. In addition, increased temperatures would be conducive to the formation of air pollutants, resulting in poor air quality.

It is also important to note that even if GHG emissions were to be eliminated or dramatically reduced, it is projected that the effect of those emissions would continue to affect global climate for centuries.

Future residents of the Proposed Project site could be exposed to increased risk of dehydration, heat stroke, heat exhaustion, heart attack, stroke, and respiratory disease. These risks, however, would be no different from those experienced by the San Diego region as a whole under the described scenario. Increased temperatures would result in more frequent use of air conditioning that would increase energy costs to residents, and could put a strain on the area's energy supplies. Because the Proposed Project is located inland well above sea level, no impacts related to sea level rise are anticipated.

Effects of GHG Emissions

In order to serve as a guide for determining when a project triggers the need for a GHG significance determination, the County has established a screening threshold for GHG emission analysis (County 2012).

For operational GHG emissions, the County recommends the above 2,500 MT CO_2e per year as a conservative threshold for requiring further GHG analysis and mitigation. Emissions

contributing to this number include those from vehicle trips, typical energy and water use, and other factors associated with projects. Given exceedances of the above two thresholds for construction, additional analysis was undertaken.

The method of quantifying GHG emissions in this analysis was based on methodologies recommended and used by several California air quality management districts (AQMDs), including the South Coast and Bay Area AQMDs, as well as by CARB. To evaluate the reductions in GHG emissions from Project design features relative to the unmitigated scenario, emissions from each source of GHGs were estimated for two methods: first, the Project without GHG-reducing design features (i.e., the unmitigated Project- Equivalent) and; second, the project with GHG-reducing green building design.

Construction Greenhouse Gas Emissions. As noted in Chapter 1.0 of this EIR, construction scheduling and phasing are not known with precision at this time. Project land uses (i.e., the order of residential, mixed use, general commercial, and/or limited industrial uses) would be implemented subject to economic conditions and need. Project-related emissions, however, have been projected assuming maximum amounts of activity within short time frames (see detail provided in Subchapter 2.2, Air Quality). The reader also is referred to Appendix H of this EIR for additional detail related to GHGs.

The Project would emit GHGs during its construction phases from combustion of fossil fuels in construction equipment, worker vehicles, and delivery vehicles accessing the Project site. Construction emissions were estimated using CalEEMod, with anticipated construction start date of January 2015, based on information provided by the Project Applicant. Table 3.1.1-3, Estimated Construction Emissions (Option 1), presents a summary of the GHG emissions resulting from construction activities under Option 1, where Phase 1 would involve the mass grading of the entire Project site area and Phase 2 would involve the utility installation at the Project site. Table 3.1.1-4, Estimated Construction Emissions (Option 2), presents a summary of the GHG emissions resulting from construction activities under Option 2, where mass grading would occur in two phases. (See detail provided in Subchapter 2.2, Air Quality) These estimates use default construction equipment and construction vehicle trip length assumptions built into CalEEMod. In addition, the CARB off-road equipment standards identified below would be implemented as part of Project design during construction. This control measure can be accounted for within the CalEEMod model as mitigation measures. Some of the measures are available in CalEEMod to analyze the emission reductions, and the output files are labeled as mitigated construction emissions. It is mandatory for all construction equipment to comply with CARB emission standards for implementing BMPs to minimize impacts and therefore the following measure would be included in Project design:

- All off-road diesel construction equipment operating on the Project site would meet USEPA-Certified Tier 4 emissions standards. In addition, all construction equipment would be outfitted with best available control technology (BACT) devices certified by the CARB. Any emissions control device used by the contractor would achieve emissions reductions that are no less than what could be achieved by a Level 2 diesel emissions control strategy for a similarly sized engine as defined by the CARB regulations.

As shown in Tables 3.1.1-3 and 3.1.1-4, the Project-related construction activities for mass grading Options 1 and 2 are estimated to generate approximately 20,138 and 19,484 metric tons

of CO_2e emissions, respectively. For construction emissions, the County guidance recommends that the emissions be amortized over 20 years and added to operational emissions, as appropriate. Amortized over 20 years, construction equipment would contribute 1,006.91 and 974.22 metric tons per year of CO_2e emissions to the Project's total under Options 1 and 2, respectively. The higher of these emissions estimates are added to the expected annual operational GHG emissions below.

Operational Greenhouse Gas Emissions. Direct GHG emissions from operation of the Project would include those associated with vehicle trips, natural gas combustion (furnace), use of other fuel-consuming equipment, refrigeration, emergency stand-by generators, etc. Indirect emissions would be associated with electrical generation, water consumption, and solid waste disposal. Table 3.1.1-5, Scenario 1 – Estimated Operational Emissions, and Table 3.1.1-6, Scenario 2 – Estimated Operational Emissions, present the summary of unmitigated GHG emissions for Operational Scenarios 1 and 2, respectively, based on the CalEEMod modeling results. The methodology used to calculate vehicle, electricity and natural gas GHG emissions are discussed below.

Energy Emissions. Electric power generation accounted for the second largest sector contributing to both inventoried and projected statewide GHG emissions, comprising 24 percent of the projected total 2020 statewide BAU emissions (CARB 2008b). Buildings use electricity for lighting, heating and cooling. Electricity generation entails the combustion of fossil fuels, including natural gas and coal, which are then stored and transported to end users. A building's electricity use is thus associated with the off-site or indirect emission of GHGs at the source of electricity generation (power plant). Due to the nature of the electrical grid, it is not possible to say with certainty where energy consumed will be generated. Therefore, GHG emissions resulting from electricity generation were estimated using the CalEEMod default values for the San Diego Gas and Electric (SDG&E) region. The electricity energy use is in kilowatt hours per size metric for each land use subtype and natural gas use is in kiloBritish Thermal Units (kBTU) per size metric for each land use subtype. The CalEEMod model default values are based on the CEC sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies.

For Project calculations with GHG-reducing design features, a 15 percent improvement in building energy efficiency over Title 24, 2008 was factored into the projections.

*Water Use Emissions***.** The provision of potable water consumes large amounts of energy associated with source and conveyance, treatment, distribution, end use, and wastewater treatment. This type of energy use is known as embodied energy. The electricity intensities are multiplied by the utility intensity factors for the GHGs and are classified as indirect emissions. The default electricity intensity is from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for northern and southern California. GHG emissions associated with water use are calculated by multiplying the embodied energy in a gallon of potable water by the total number of gallons projected to be consumed by the Project and then by the electricity generation GHG emissions factors.

Solid Waste Emissions. The disposal of solid waste produces GHG emissions from anaerobic decomposition in landfills, incineration, and transportation of waste. For Project calculations with and without GHG-reducing design features, a County-wide average waste disposal rate was used that was obtained from the California Department of Resources Recycling and Recovery (CalRecycle). While the Proposed Project would implement lumber and other materials conservation (see Section 2.2 of this EIR) and likely generate less landfill waste than average, these savings cannot be estimated at this time.

CalRecycle maintains a list of different waste generation rates for residential, commercial, and industrial uses from a variety of sources. The single-family residential waste generation rates range from 7.8 to 11.4 pounds per unit per day (CalRecycle 2009). To be conservative, the higher generation rates of 11.4 pounds per unit per day were used to determine the total volume of waste by weight. This value was then multiplied by emissions factors obtained from the USEPA report *Solid Waste Management and Greenhouse Gases* (USEPA 2006) for the different material classes (glass, metal, plastic, etc) and two different waste streams (to landfill or to recycling). For the landfill estimates, landfill gas recovery for energy was assumed for both the landfill and recycling estimates. Local recycling and disposal (to landfill) percentages (of total waste generated) were also obtained from CalRecycle and reflect current waste disposal practice in accordance with the statutory 50 percent diversion mandate.

As shown in Table 3.1.1-2, the CARB Scoping Plan includes recycling and waste measures that would reduce statewide emissions by roughly 1.0 MMT CO_2e by 2020. This is to be achieved through improved landfill methane capture. Also, while not shown in Table 3.1.1-2, the CARB Scoping Plan includes other waste sector reduction strategies not counted toward the statewide 2020 emissions reduction target. CARB estimates that these additional waste and recycling sector measures would provide up to an additional 10 MMT CO_2e reduction by 2020. Thus, it is possible that the embodied energy and emissions resulting from disposing of the Proposed Project's solid waste would be reduced by approximately 126 MT CO_2e by 2020 due to these measures.

Transportation Emissions. Transportation-related GHG emissions comprise the largest sector contributing to both inventoried and projected statewide GHG emissions, with estimates assuming it will account for 38 percent of the projected total statewide 2020 BAU emissions. On-road vehicles alone are assumed to account for 35 percent of forecasted statewide 2020 BAU emissions. GHG emissions from vehicles come from the combustion of fossil fuels (primarily gasoline and diesel) in vehicle engines. The quantity and type of transportation fuel consumed determines the amount of GHGs emitted from a vehicle. Therefore, not only are vehicle engine and fuel technology of importance, but so too are the amount of vehicle trips and trip distances that motorists travel.

The Project without GHG-reducing design features would generate 36,206 ADT (LLG Engineers 2013). As identified in the Section 3.1.1.1, Regulatory Background, there are several plans, policies, and regulations aimed at reducing transportation-related GHG emissions statewide by 2020. These regulations would reduce statewide transportation-related GHG emissions by increasing average vehicle fuel economy, decreasing engine combustion emissions, and decreasing average VMT and trip length.

The key regulations affecting vehicle emissions include the national CAFE Standards that would increase average fuel economy to 35 mpg by 2020; the state Pavley I and II GHG Vehicle Emissions Standards that require improved vehicle engine technologies to reduce GHG emissions from vehicles, and the LCFS which reduce the carbon content of the fuel vehicles burn. These actions have been approved by either the national or state legislatures and are coming into effect on a staggered timeline, with 2016 being the earliest vehicle model year affected. As shown in Table 3.1.1-2, CARB estimates that an approximate 46.7 MMT CO_2e reduction, or 32 percent of the reduction target for capped sources and 27 percent of the total 174 MMT CO_2e reduction target specified in the Scoping Plan, would be achieved through just these two transportation-related regulatory actions. A third action, the Vehicle Efficiency Measure, is estimated by CARB to add another 4.5 MMT CO_2e, or 2.5 percent, to the total statewide reductions. The national CAFE Standards, while not quantified in the CARB Scoping Plan, would likely contribute to further reductions in statewide vehicle GHG emissions.

It can be assumed that vehicles associated with the Project would benefit from the new regulations, and associated vehicle emissions would accordingly decrease. These transportation-related emissions reductions would be achieved through mandatory regulations applicable to all vehicle emissions within the state and are not attributable to specific GHG reduction features of the Project.

Per the County's Guidelines, it is acceptable to apply the reductions attributed from Pavley II and LCFS towards the required 16 percent GHG emission reduction requirement for the Project. The CalEEMod program includes the impact of LCFS in its default emission factors. Consequently, the CalEEMod emission estimates for both unmitigated and mitigated conditions were adjusted to reflect the allowed reductions for the Project. The reduction associated with Pavley I is not allowed to be applied towards the reduction target, but is already accounted for in the CalEEMod defaults, therefore, no adjustment was made to either the unmitigated or mitigated condition.

CalEEMod assumed an annual total of 60,668,556 miles would be traveled each year by Project residents. Based on the annual VMT estimates, the unmitigated Proposed Project Scenario 1 would result in the GHG vehicle emissions of 25,278 MT CO_2e each year and Scenario 2 would generate 25,950 MT CO_2e each year.

Total GHG Emissions with Implementation of Project Design Features

The Proposed Project would incorporate design features to conserve energy and water; promote recycling and waste reduction; and make development accessible to public transit users, bicyclists, and pedestrians. Such environmental design considerations are presented in Table 1-3 of this EIR. In addition, the Proposed Project would obtain electricity from SDG&E, which is increasing its share of energy generated by renewable sources as mandated by AB 32. Table 3.1.1-7, Scenario 1 – Estimated Operational Emissions with Project Design Features and Table 3.1.1-8, Scenario 1 – Estimated Operational Emissions with Project Design Features, summarize the Proposed Project with project design features under both scenarios.

Vehicle Emissions. The Project would have a gross trip generation rate of 36,206 ADT. As discussed above, Pavley II and LCFS can be included toward the minimum 16 percent mitigation

requirement. Further, the Project would incorporate a mix of uses that would reduce overall VMT and corresponding GHG vehicular emissions. According to the CAPCOA methodology, a land use index measurement can be applied to the Proposed Project, based on Measure LUT-3 (CAPCOA 2010). The land use index measurement is based on the mix of land uses associated with a development. The Proposed Project would change the land use from a single commercial office land uses into a mix of industrial office, commercial retail, and residential land uses. The combined Pavley II (2.3%) and land use reductions (31%) would result in 32.3% reduction in vehicular emissions. However, since 30% is the maximum reduction credit allowed, the mitigated condition only reflects a reduction of 6,894 MT CO_2e towards vehicular emissions. This would result in the emission of 16,086 MT CO_2e annually from the Project for Scenario 1 and 16,514 MT CO_2e for Scenario 2.

Energy Emissions. The Proposed Project would be constructed in accordance with the current 2008 Title 24. The RPS beyond 20 percent (up to 33 percent) can be included toward the minimum 16 percent mitigation requirement. Therefore, the electricity emissions calculated for the unmitigated project were reduced by an additional 13 percent to account for further implementation of the RPS. Additionally, the project would exceed the current 2008 California Energy Code's energy efficiency standards by 15 percent. This would result in the emission of 4,022 MT CO_2e annually for Scenario 1 and 4,031 MT CO_2e for Scenario 2.

Water Emissions. Since the unmitigated Project would be constructed in accordance with current Title 24, the unmitigated Project water emissions were adjusted to account for the recent CalGreen mandate to reduce water consumption by 20 percent. This would result in the emission of 2,993 MT CO_2e annually for Scenario 1 and 3,707 MT CO_2e for Scenario 2.

Solid Waste Emissions. The Proposed Project solid waste emissions would be the same as the emissions calculated in Tables 3.1.1-5 and 3.1.1-6. This would result in the emission of 1,020 MT CO_2e annually under either scenario.

The Project has been designed in accordance with the Building Industry Association's CGB program, a professionally recognized green building program that identifies building performance standards to achieve improved energy efficiency, water conservation, sustainable materials use, waste reduction, lumber conservation, indoor air quality, and heat island avoidance. The key project CGB design features accounted for in the project GHG reduction estimates include: 15 percent greater energy efficiency than the current Title 24 2008 energy code; and 20 percent greater water savings than the current plumbing code. Incorporation of the following design measures (refer to Table 1-3 of this EIR) would ensure that the Proposed Project meets the reductions discussed above.

- The Project would exceed the current 2008 California Energy Code's residential and nonresidential energy efficiency standards by 15 percent as a mandatory project design feature. It would accomplish this through improved heating, ventilation and air condition (HVAC) systems and duct seals; enhanced ceiling, attic and wall insulation; Energy Star appliances; high-efficiency water heaters; energy-efficient three-coat stucco exteriors; energy-efficient lighting; and high-efficiency window glazing. These energy features would undergo independent third party inspection and diagnostics as part of the CGB

verification and commissioning process. The energy features would also be demonstrated/verified in the Project's Title 24 Compliance Report submitted during the building permit process.

- The Project's construction plans and specifications shall indicate in the general notes or individual detail drawings the advanced water conservation features such as advanced plumbing systems (e.g., parallel hot water piping or hot water recirculation systems, and fixtures such as ultra-low flow toilets, water-saving showerheads and kitchen faucets, and buyer-optional high-efficiency clothes washers), product specifications and methods of construction and installation that are required to surpass the state plumbing code by a minimum of 20 percent, to achieve a minimum 20 percent reduction in water usage. In accordance with CGB criteria, verification of the 20 percent reduction in potable water use shall be demonstrated by verifying each plumbing fixture and fitting meets the 20 percent reduced flow rate or by calculating a 20 percent reduction in the building water use baseline. This documentation shall be provided by the project applicant to the County prior to issuance of the first building permit. The performance of the water conservation design shall be verified through final inspection prior to issuance of a final certificate of occupancy.

  In addition to these indoor water use conservation features, the Project's outdoor landscaping plan minimizes turf, maximizes drought-tolerant plants, and incorporates weather-based irrigation controllers, multi-programmable irrigation clocks, and a high efficiency drip irrigation system. At the time of final inspection, a manual shall be placed in each building that includes, among other things, information about water conservation.

- In accordance with CalGreen criteria and state and local laws, at least 50 percent of on-site construction waste and ongoing operational waste would be diverted from landfills through reuse and recycling. To further minimize waste, the Project would incorporate recycled materials for flooring, and certified sustainable wood products and other recycled or rapidly renewable building materials where possible. Areas for storage and collection of recyclables and yard waste would be provided for each residence.

- To maximize shade and reduce heat island effects, the landscape plan includes strategic location of deciduous trees and other vegetation. Impervious surfaces, including paved parking areas, would also be minimized and pervious pavers used instead where practical. No CFC-based refrigerants would be used, and interior finishes, adhesives, sealants, paints and coatings, and carpet systems would be low in VOCs, and they would meet the testing and product requirements of one or more nationally recognized green product labeling programs. Compliance with these requirements of the CGB program shall be verified through documentation.

As evaluated per the County's GHG guidelines, the Project would achieve GHG reductions associated with statewide measures and project design features of 28 percent under Scenario 1 and 26 percent under Scenario 2. These reductions would meet the County's GHG reduction targets, and would therefore be consistent with the goals and strategies of local and state plans,

policies, and regulations aimed at reducing GHG emissions from land use and development. Impacts would be **less than significant**.

Applicable Plans, Policies, and Regulations

Guideline for the Determination of Significance

The Proposed Project would result in a significant impact associated with climate change if it would:

2. Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

Guideline Source

This guideline is based on Appendix G of the State CEQA Guidelines.

Analysis

The regulatory plans and policies discussed extensively in Section 3.1.1.1 above aim to reduce national, state, and local GHG emissions by primarily targeting the largest emitters of GHGs: the transportation and energy sectors. Plan goals and regulatory standards are thus largely focused on the automobile industry and public utilities. For the transportation sector, the reduction strategy is generally three pronged: to reduce GHG emissions from vehicles by improving engine design; to reduce the carbon content of transportation fuels through research, funding and incentives to fuel suppliers; and to reduce the miles these vehicles travel through land use change and infrastructure investments.

For the energy sector, the reduction strategies aim to reduce energy demand, impose emission caps on energy providers, establish minimum building energy and green building standards, transition to renewable non-fossil fuels, incentivize homeowners and builders, fully recover landfill gas for energy, expand research and development, etc.

Local Plans

The Proposed Project would achieve substantial GHG reductions through green building design that includes improved energy efficiency, water conservation, sustainable materials use, and waste reduction. In addition to the County's discretionary review process, the CAP compliance checklist was prepared that compares the Project consistency with the measures in the CAP. The CAP compliance checklist is presented in Attachment B of the Climate Change Analysis Report (Appendix H of this EIR). Verification and commissioning of these features would occur through independent third party inspection and diagnostics. The Project would be consistent in achieving a 16 percent reduction relative to an unmitigated project, and would thus be consistent with the County's General Plan and anticipated CAP goals for private land use development.

State Plans

EO S-3-05 established GHG emission reduction targets for the state, and AB 32 launched the Climate Change Scoping Plan that outlined the reduction measures needed to reach these targets. The Scoping Plan and its implementing and complementary regulations are discussed at length in Section 3.1.1.1. As discussed above, the Project, evaluated relative to an unmitigated/baseline project, would be consistent in achieving the 16 percent reduction. As described in Section 4.1.1.1, the 16 percent reduction in GHG emissions goal relative to an unmitigated/baseline project is derived from CARB's 2010 updated 2020 emissions projections and revised 2011 Scoping Plan. The revised projections and Scoping Plan account for less overall growth and less energy/fuel consumption due to the long-term dampened economic conditions. CARB's revised baseline 2020 projection also accounts for the Pavley I and RPS 20 percent GHG reductions, which are two Scoping Plan measures that have since been adopted as regulations. Given a lower 2020 projected total emissions, and a fixed 1990 emissions level (as the target for 2020), CARB reduced the needed statewide reduction from 174 MMT CO_2e to 80 MMT CO_2e. Thus, by achieving a 16 percent reduction relative to unmitigated/baseline project emissions, the Project would be considered consistent with the revised 2011 Scoping Plan and AB 32's 2020 reduction target.

Summary

The Project design features would conform to the primary regulations and policies governing the control of GHG emissions stated above. Accordingly, with implementation of the Project design measures identified above, impacts associated with GHG emissions would be **less than significant**.

3.1.1.3 *Cumulative Impact Analysis*

As described in Section 3.1.1.1 of this discussion, the entire issue of global climate change requires cumulative review. As a result, additional discussion is not required.

3.1.1.4 *Significance of Impacts*

Based on the analysis provided above, Proposed Project climate change impacts related to Project construction and operation were found to be less than significant, based on the implementation of identified Project design measures and conformance with applicable regulatory requirements.

3.1.1.5 *Conclusion*

The Project would be compliant with federal, state, and local orders, ordinances, and regulations related to reductions in GHG and minimization of contribution to climate change. As noted above, the Project would be consistent with the County's 16 percent reduction target. The Project would comply with any state-mandated requirements resulting from AB 32 and the statewide emissions inventory, as well as County requirements resulting from the General Plan update process. Project-specific reductions beyond the AB 32 guidelines and compliance with future statewide and County programs would avoid both Project-direct and cumulatively considerable impacts.

Table 3.1.1-1
GLOBAL WARMING POTENTIALS (GWP) AND ATMOSPHERIC LIFETIMES (Years)

Gas	Atmospheric Lifetime (years)	100-year GWP*
CO_2	50-200	1
CH_4**	9-15	21
N_2O	120	310
HFC-23	264	11,700
HFC-125	32.6	2,800
HFC-134a	14.6	1,300
HFC-143a	48.3	3,800
HFC-152a	1.5	140
HFC-227ea	36.5	2,900
HFC-236fa	209	6,300
HFC-4310mee	17.1	1,300
CF_4	50,000	6,500
C_2F_6	10,000	9,200
C_4F_{10}	2,600	7,000
C_6F_{14}	3,200	7,400
SF_6	3,200	23,900

Source: USEPA 2010
* GWPs used here are calculated over a 100-year time horizon.
** The methane GWP includes direct effects and those indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

Table 3.1.1-2
CARB SCOPING PLAN RECOMMENDED GHG REDUCTION MEASURES

Recommended Reduction Measures	Estimated 2020 Reductions (MMT CO_2e)/Percent[1]
California Light-Duty Vehicle Greenhouse Gas Standards	31.7 (18.22%)
• Implement Pavley I Standards	
• Develop Pavley II light-duty vehicle standards	
Energy Efficiency	26.3 (15.11%)
• Building/appliance efficiency, new programs, etc.	
• Increase CHP generation by 30,000 GWh	
• Solar Water Heating (AB 1470 goal)	
Renewables Portfolio Standard (33% by 2020)	21.3 (12.24%)
Low Carbon Fuel Standard	15 (8.62%)
Regional Transportation-Related GHG Targets[2]	5 (2.87%)
Vehicle Efficiency Measures	4.5 (2.59%)

Table 3.1.1-2 (cont.)
CARB SCOPING PLAN RECOMMENDED GHG REDUCTION MEASURES

Recommended Reduction Measures	**Estimated 2020 Reductions (MMT CO_2e)/Percent[1]**
Goods Movement	3.7 (2.13%)
• Ship Electrification at Ports	
• System-wide Efficiency Improvements	
Million Solar Roofs	2.1 (1.21%)
Medium/Heavy Duty Trucks	1.4 (0.80%)
• Heavy-Duty Vehicle GHG Reduction (Aerodynamic Efficiency)	
• Medium- and Heavy-duty Vehicle Hybridization	
High Speed Rail	1.0 (<1.0%)
Industrial Measures (for sources covered under cap & trade program)	0.3 (<0.5%)
• Refinery Measures	
• Energy Efficiency and Co-benefits Audits	
Additional Reductions Necessary to Achieve the Cap	34.4 (20%)
Industrial Measures (for sources not covered under cap & trade program)	1.1 (<1%)
• Oil and Gas Extraction and Transmission	
High Global Warming Potential Gas Measures	20.2 (12%)
Sustainable Forests	5.0 (3%)
Recycling and Waste (landfill methane capture)	1.0 (0.6%)
TOTAL ESTIMATED REDUCTIONS COUNTED TOWARDS 2020 TARGET [3]	**174**
Other Recommended Measures	**Estimated 2020 Reductions (MMT CO_2e)/Percent**
State Government Operations	1-2%
Local Government Operations	TBD
Green Building	26 (14.94%)
Recycling and Waste	9 (5.17%)
Water Sector Measures	4.8 (2.76%)
Methane Capture at Large Dairies	1.0 (<1%)

Source: CARB 2008

Note: CARB's 2010 revised BAU 2020 projections of 507 MMT CO_2e, based on the economic downturn and incorporation of Pavley I and 20 percent RPS, indicate that the total reduction for the recommended measures is now 80 MMT CO_2e.

[1] Percentages are relative to the total of 174 MMT CO_2e, and may not total 100 due to rounding.

[2] This number represents an estimate of what may be achieved from local land use changes. It is not the SB 375 regional target. CARB will establish regional targets for each MPO following input of the Regional Targets Advisory Committee and a public stakeholders consultation process per SB 375.

[3] The total reduction for the recommended measures slightly exceeds the 169 MMT CO_2e of reductions estimated in CARB's BAU 2020 Emissions Forecast of 596 MMT CO_2e made in 2008. This is the net effect of adding several measures and adjusting the emissions reduction estimates for some other measures.

Table 3.1.1-3
ESTIMATED CONSTRUCTION EMISSIONS
(OPTION 1) (MT/YR)

		CO_2	CH_4	N_2O	CO_2e
PA	**Year**	**MT/yr**			
Mass Grading for All PAs	2015	6,069.48	0.50	0.00	6,079.94
4 & 5	2016	409.98	0.04	0.00	410.81
2, 4 & 5	2017	3,137.59	0.22	0.00	3,142.24
2	2018	3,526.92	0.23	0.00	3,531.69
2	2019	3,356.96	0.20	0.00	3,361.12
2	2020	338.99	0.02	0.00	339.48
2 & 3	2021	1,805.23	0.10	0.00	1,807.50
2 & 3	2022	663.24	0.05	0.00	664.18
1	2023	785.92	0.03	0.00	786.59
1	2024	14.53	0.00	0.00	14.55
TOTAL CONSTRUCTION GHG EMISSIONS					20,138.10

Source: HELIX 2013c

Table 3.1.1-4
ESTIMATED CONSTRUCTION EMISSIONS
(OPTION 2) (MT/YR)

		CO_2	CH_4	N_2O	CO_2e
PA	**Year**	**MT/yr**			
Mass Grading 1st Part	2015	4,576.12	0.38	0.00	4,584.20
4 & 5	2016	409.98	0.04	0.00	410.81
2, 4 & 5	2017	3,137.59	0.22	0.00	3,142.24
2	2018	3,526.92	0.23	0.00	3,531.69
2	2019	3,356.96	0.20	0.00	3,361.12
2	2020	338.99	0.02	0.00	339.48

Table 3.1.1-4 (cont.)
ESTIMATED CONSTRUCTION EMISSIONS
(OPTION 2) (MT/YR)

		CO_2	CH_4	N_2O	CO_2e
PA	**Year**	**MT/yr**			
Mass Grading 2nd Part	2020	840.73	0.06	0.00	841.96
2 & 3	2021	1,805.23	0.10	0.00	1,807.50
2 & 3	2022	663.24	0.05	0.00	664.18
1	2023	785.92	0.03	0.00	786.59
1	2024	14.53	0.00	0.00	14.55
TOTAL CONSTRUCTION GHG EMISSIONS					19,484.32

Source: HELIX 2013c

Table 3.1.1-5
SCENARIO 1 - ESTIMATED UNMITIGATED OPERATIONAL EMISSIONS (MT/YR)

	CO_2	CH_4	N_2O	CO_2e
Source	**MT/yr**			
Amortized Construction	1,005.44	0.07	0.00	1,006.91
Area	1,209.30	0.02	0.05	1,226.71
Energy	4,213.23	0.15	0.06	4,235.49
Mobile	25,256.44	1.04	0.00	25,278.46
Waste	454.95	26.89	0.00	1,019.57
Water	3,124.73	19.86	0.53	3,707.32
TOTAL	35,264.09	48.03	0.64	36,474.46

Source: HELIX 2013c – CalEEMod results are provided in Attachment A of EIR Appendix H.

Table 3.1.1-6
SCENARIO 2 - ESTIMATED UNMITIGATED OPERATIONAL EMISSIONS (MT/YR)

	CO_2	CH_4	N_2O	CO_2e
Source	**MT/yr**			
Amortized Construction	1,005.44	0.07	0.00	1,006.91
Area	1,209.30	0.02	0.05	1,226.71
Energy	4,221.85	0.15	0.06	4,244.16
Mobile	25,927.35	1.078	0.00	25,950.10
Waste	454.95	26.89	0.00	1,019.57
Water	3,124.73	19.86	0.53	3,707.32
TOTAL	35,943.62	48.068	0.64	37,154.77

Source: HELIX 2013c – CalEEMod results are provided in Attachment A of EIR Appendix H.

Table 3.1.1-7
SCENARIO 1 - ESTIMATED OPERATIONAL EMISSIONS WITH PROJECT DESIGN FEATURES (MT/YR)

	CO_2	CH_4	N_2O	CO_2e
Source	**MT/yr**			
Amortized Construction	1,005.44	0.07	0.00	1,006.91
Area	1,209.30	0.02	0.05	1,226.71
Energy	4,001.22	0.14	0.06	4,022.32
Mobile	16,072.28	0.91	0.00	16,086.29
Waste	454.95	26.89	0.00	1,019.57
Water	2,526.58	15.89	0.43	2,992.79
TOTAL	25,269.77	43.92	0.54	26,354.59

Source: HELIX 2013c – CalEEMod results are provided in Attachment A of EIR Appendix H.

Table 3.1.1-8
SCENARIO 2 - ESTIMATED OPERATIONAL EMISSIONS WITH PROJECT DESIGN FEATURES (MT/YR)

	CO_2	CH_4	N_2O	CO_2e
Source	**MT/yr**			
Amortized Construction	1,005.44	0.07	0.00	1,006.91
Area	1,209.30	0.02	0.05	1,226.71
Energy	4,009.58	0.14	0.06	4,030.73
Mobile	16,499.22	0.98	0.00	16,513.70
Waste	454.95	26.89	0.00	1,019.57
Water	3,124.73	19.86	0.53	3,707.32
TOTAL	26,303.22	47.97	0.64	27,504.94

Source: HELIX 2013c – CalEEMod results are provided in Attachment A of EIR Appendix H.

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