

## **3.0 ENVIRONMENTAL EFFECTS FOUND NOT TO BE SIGNIFICANT**

### **3.1 Effects Found Not Significant as Part of the EIR Process**

#### **3.1.1 Global Greenhouse Gases**

HELIX prepared the Greenhouse Gases Analyses Report (HELIX 2015f) in conformance with the County's 2015 GHG Guidance – *Recommended Approach to Addressing Climate Change in CEQA Documents* (County 2015), to evaluate potential environmental impacts associated with the Proposed Project's emissions of greenhouse gases (GHGs), and the effects of global climate change on the Proposed Project. With regards to GHG significance conclusion and analysis, current County Guidance (2015) was used. The Greenhouse Gases Analyses Report is summarized in the following discussion, with the complete report included as Appendix J 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 GHGs 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 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<sub>2</sub>), methane (CH<sub>4</sub>), N<sub>2</sub>O, hydrofluorocarbons (HFCs, such as HFC-23), perfluorocarbons (PFCs, such as CF<sub>4</sub>), and sulfur hexafluoride (SF<sub>6</sub>), 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 (USEPA 2010a). 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<sub>2</sub> is equal to “one” and the GWP of other GHGs are expressed as multiples of the GWP of CO<sub>2</sub> (see Table 3.1.1-1, *Global Warming Potentials and Atmospheric Lifetimes*). GHG emissions are expressed in terms of carbon dioxide equivalent (CO<sub>2</sub>e) when normalized by their respective GWPs.

### 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<sub>2</sub> 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<sub>2</sub> include the burning of fuels such as coal, oil, natural gas and wood. Concentrations are currently around 379 ppm. Some scientists say that concentrations may increase to 1,130 CO<sub>2</sub> equivalent (CO<sub>2</sub>e) 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<sub>4</sub> 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<sub>2</sub>. A natural source of CH<sub>4</sub> is from the decay of organic matter. Geological deposits known as natural gas fields contain CH<sub>4</sub>, which is extracted for fuel. Other sources are from decay of organic material in landfills, fermentation of manure, and cattle digestion.

N<sub>2</sub>O, also known as laughing gas, is a colorless gas and has a GWP of about 310. N<sub>2</sub>O 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<sub>2</sub>O. It is used in rocket engines, as an aerosol spray propellant, and in race cars. During combustion, NO<sub>x</sub> (NO<sub>x</sub> is a generic term for mono-nitrogen oxides, NO and NO<sub>2</sub>) is produced as a criteria pollutant and is not the same as N<sub>2</sub>O. Very small quantities of N<sub>2</sub>O may be formed during fuel combustion by nitrogen and oxygen.

Fluorocarbons are gases formed synthetically by replacing all hydrogen atoms in CH<sub>4</sub>, or ethane, with chlorine and/or fluorine atoms. Chlorofluorocarbons (CFCs) 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<sub>6</sub> is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It has the highest GWP of any gas – 23,900. SF<sub>6</sub> 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 the California Air Resources Board (CARB), it is difficult to make an accurate determination of the contribution of ozone precursors (NO<sub>x</sub> 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<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O, are produced by both natural and anthropogenic (human) sources. The remaining gases HFCs, chlorofluorides (CFs), and SF<sub>6</sub>, are the result of solely human processes.

### Regulatory Setting

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 substances (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 2007a). The substantial reduction of ODCs also has benefits

relative to global climate change 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 2012, the United Nations representatives met in Doha, Qatar to attempt to develop a framework for addressing global climate change issues in the future. The Doha Conference produced a package of documents collectively titled *The Doha Climate Gateway*. The documents collectively contained an amendment to the Kyoto Protocol (to be ratified before entering into force) featuring a second commitment period running from 2012 until 2020, was limited in scope to 15 percent of the global CO<sub>2</sub> emissions, due to the lack of commitments by Japan, Russia, Belarus, Ukraine, and New Zealand (nor the U.S. and Canada, which were not parties to the Protocol in that period), and due to the fact that developing countries like China (the world's largest emitter), India and Brazil are not subject to emissions reductions under the Kyoto Protocol.

#### 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<sub>2</sub> 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<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFC, PFC, and SF<sub>6</sub>) 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 are jointly implemented by the USEPA and the U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA) on April 1, 2010.

#### *Mandatory Reporting Rule of GHGs*

On January 1, 2010, the USEPA started requiring, for the first time, large emitters of heat-trapping emissions to begin collecting 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 (MT) or more of CO<sub>2</sub>e per year, are required to report GHG emissions data to the USEPA 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. First enacted by Congress in 1975, CAFE's purpose is to reduce energy consumption by increasing the fuel economy of cars and light trucks. The NHTSA has set standards to increase CAFE levels rapidly over the next several years, which will improve the fuel consumption rates in motor vehicles across the United States. In 2007, as part of the Energy and Security Act of 2007, CAFE standards were increased for new light-duty vehicles to 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 an average fuel economy of 35.5 mpg by 2016. On May 21, 2010, following the direction set by President Obama, NHTSA and USEPA issued joint Final Rules for CAFE and GHG emissions regulations for model years 2017 and beyond.

#### *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 USEPA 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: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. Energy-efficient buildings require less electricity, natural gas, and other fuels.

The Title 24 standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The 2013 update to the 2008 standards went into effect in July 2014. The California Energy Commission's 2013 Building Energy Efficiency Standards are expected to achieve 25 percent more efficient than previous standards for residential homes. The Building Energy Efficiency Standards offer includes better windows, insulation, lighting, ventilation systems and other features that reduce energy consumption in homes.

### *California Code of Regulations, Title 24, Part 11*

California Code of Regulations, Title 24, Part 11, outlines the CALGreen code. CALGreen is the first-in-the-nation statewide mandatory green building code. California now requires new buildings to reduce water consumption, employ building commissioning to increase building system efficiencies, divert construction waste from landfills, and to install low pollutant-emitting finish materials. CALGreen has approximately 52 mandatory measures and additional measures designed to allow local cities to adopt codes that go beyond the state mandatory provisions. Some key mandatory measures for commercial buildings include specified parking for clean air vehicles, a 20 percent reduction of potable water use within buildings, a 50 percent construction waste diversion from landfills, use of building finish materials that emit low volatile organic compounds, and building commissioning. Other key components include increased reduction in energy usage by 15 percent and increased reduction in potable water use. The CALGreen code includes the critical issue of compliance verification by utilizing the existing building code enforcement infrastructure, and allows local public agencies to incorporate the CALGreen code provisions into their construction field inspections. The mandatory CALGreen measures will be inspected and verified by local building departments. A 2013 update to the CALGreen code was adopted in 2013 and went into effect in July 2014.

### *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 California Energy Commission (CEC) 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 Executive Order (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 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*

Executive Order 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 IPCC to project a series of potential warming ranges (i.e., temperature increases) that may occur in California during the 21<sup>st</sup> 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 Solutions Act of 2006*

The California Global Warming Solutions Act of 2006, widely known as Assembly Bill (AB) 32, requires the CARB to develop and enforce regulations for the reporting and verification of

statewide GHG emissions. CARB is directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. The bill sets a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner.

The heart of the bill is the requirement that statewide GHG emissions must be reduced to 1990 levels by the year 2020; this goal was identified in December 2007, and the reporting and verification requirements concerning GHG emissions were adopted on January 1, 2008. California needs to reduce GHG emissions by approximately 28.3 percent below the business as usual (BAU) predictions to achieve this goal. The bill requires the CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions. On January 1, 2011, specific GHG emission limits and reduction measures in line with AB 32 were adopted; these became enforceable on January 1, 2012.

As of October 31, 2011, 18 of 30 CARB regulations had been approved, including nine discrete early actions, as required by AB 32. The current estimate for the necessary GHG emissions reductions to attain the goals of AB 32 (i.e., 1990 levels by 2020) is 174 million metric tons of CO<sub>2</sub>e (MMT CO<sub>2</sub>e). It is estimated that nine proposed discrete early actions identified by CARB will provide approximately 16 MMT CO<sub>2</sub>e of GHG reductions while the other early actions will provide approximately 26 MMT CO<sub>2</sub>e of GHG reductions. It also is anticipated that an additional 30 MMT CO<sub>2</sub>e in reductions will be achieved from the passage of anti-idling measures and AB 1493 (described below). The remaining 102 MMT CO<sub>2</sub>e are expected to be achieved through CARB's Scoping Plan and other emission reduction efforts by members of the CAT.

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 Irrigated Residents, et al v. California Air Resources Board*, Case No. CPF-09-509562, March 18, 2011). In response to this litigation, the 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<sub>2</sub>e. Two reduction measures (Pavley I and the Renewables Portfolio Standard (RPS) [12% – 20%]) 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<sub>2</sub>e. The updated forecast of 507 MMT CO<sub>2</sub>e is referred to as the AB 32 2020 baseline. Reduction of an estimated 80 MMT CO<sub>2</sub>e are necessary to reduce Statewide emissions to the AB 32 target of 427 MMT CO<sub>2</sub>e by 2020 (CARB 2011).

### *Senate Bill 1078*

Established in 2002 under SB 1078, accelerated in 2006 under SB 107 and expanded in 2011 under SB 2, California's RPS is one of the most ambitious renewable energy standards in the country. The RPS program originally required investor-owned utilities, electric service providers, and community choice aggregators to procure 20 percent of electricity from eligible renewable energy resources by 2010. On November 17, 2008, Governor Arnold Schwarzenegger signed EO S-14-08 requiring that all retail sellers of electricity procure

33 percent of their electricity from renewable energy sources by 2020. The following year, EO S-21-09 directed the CARB, under its AB 32 authority, to enact regulations to achieve the goal of 33 percent renewables by 2020. In April 2011, Governor Edmund G. Brown, Jr., signed SB X1-2 in an effort to codify the 33 percent by 2020 goal. This new RPS preempts the CARB's 33 percent Renewable Electricity Standard (RES) and applies to all electricity retailers in the state including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must adopt the new RPS goals of 20 percent of retail sales from renewables by the end of 2013, 25 percent by the end of 2016, and the 33 percent requirement being met by the end of 2020.

#### *Assembly Bill 1493 – Vehicular Emissions of Greenhouse Gases*

In a response to the fact that transportation sector accounts for more than half of California's CO<sub>2</sub> emissions, AB 1493 (Pavley) was enacted on July 22, 2002. AB 1493 (also referred to as Pavley or the California Light-Duty Vehicle Greenhouse Gas Standards) requires the 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 with 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, and submission of an annual report to the California Integrated Waste Management Board of an annual report describing the diversion rates.

#### *Assembly Bill 341*

In 2011, the State legislature enacted AB 341, increasing the diversion target to 75 percent statewide. AB 341 also requires the provision of recycling service to commercial and residential facilities that generate four cubic yards or more of solid waste per week.

### *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. On November 14, 2011, the Natural Resources Defense Council and Sierra Club jointly filed a Petition requesting the CEC initiate a rulemaking proceeding to ensure the current practices of California publicly owned utilities meet the requirements of SB 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<sub>2</sub> per megawatt-hour of electricity delivered (California SB 2006).

### *Senate Bill 1505*

Largely in response to EO S-7-04, SB 1505 (Lowenthal) requires the 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*

Executive Order S-01-07 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 whether 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<sub>2</sub>e 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, the 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. On September 18, 2013, the Ninth Circuit reversed the District Court's opinion and rejected arguments that implementing LCFS violates the interstate commerce clause. Therefore, the LCFS enforcement injunction has been removed, 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 the 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. 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, although the new CEQA Guidelines did not establish a threshold of significance.

### *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).

Per SB 375, CARB appointed a Regional Targets Advisory Committee (RTAC) to provide recommendations and methodologies to be used in the CARB’s target setting process on January 23, 2009. 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 be eligible for funding programmed after January 1, 2012.

On October 28, 2011, the SANDAG Board of Directors approved the 2050 Regional Transportation Plan and its Sustainable Communities Strategy (2050 RTP/SCS) for the San Diego region, becoming the first large region in California to prepare an RTP under California climate change legislation (SANDAG 2014).

On December 4, 2012, Superior Court ruled that the 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. As a response, San Diego Forward would unite two of SANDAG’s major planning efforts into one: with the next update of the RTP/SCS and an update

of the Regional Comprehensive Plan (RCP) that was adopted in 2004. San Diego Forward's Regional Plan is scheduled to be adopted in July 2015 (SANDAG 2014).

#### *Executive Order S-13-08*

Executive Order 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 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, the CARB released draft interim guidance on significance thresholds for industrial, commercial, and residential projects (CARB 2008a). 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. As such, CARB did not establish a threshold of significance. As of January 22, 2009, CARB has halted all work efforts on the draft *GHG Threshold of Significance under CEQA*.

##### *California Air Resources Board: Scoping Plan*

On December 11, 2008, CARB adopted a Scoping Plan (CARB 2008b), 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, 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 Greenhouse Gas 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.

To assess the scope of the reductions needed to return to 1990 emissions levels, the 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 GHG emissions by approximately 174 metric tons (an approximate 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.

In August 2011, CARB revised its 2020 BAU projections to account for the economic downturn and other factors in their *Supplement to the AB 32 Scoping Plan Functional Equivalent Document* (CARB 2011). The CARB’s revised estimate calculated that 2020 BAU emissions would be approximately 507 MMT CO<sub>2</sub>e per year. Thus, in order to reach the 1990 emissions level of 427 MMT CO<sub>2</sub>e, an 80 MMT CO<sub>2</sub>e (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<sub>2</sub>e (or 18 percent), counted toward the total statewide reduction target (CARB 2008b; 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<sub>2</sub>e (or 17 percent), for 37 percent of the total 80 MMT CO<sub>2</sub>e reduction target.

The 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<sub>2</sub>e for 2 percent of the then-estimated 174 MMT CO<sub>2</sub>e reduction total. The revised 2010 projections estimate that Pavley II will reduce GHG emissions from passenger vehicles by 3.8 MMT CO<sub>2</sub>e, for 5 percent of the total 80 MMT CO<sub>2</sub>e 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.

An 18 percent reduction in the intensity of transportation fuels is expected to equate to a reduction of 16.5 MMT CO<sub>2</sub>e 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<sub>2</sub>e (CARB 2008b).

The First Update to the Scoping Plan was approved by the Board on May 22, 2014, and builds upon the initial Scoping Plan with new strategies and recommendations. The First Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The First Update defines CARB’s climate change priorities for the next five years, and also sets the groundwork to reach long-term goals set forth in EOs S-3-05 and B-16-2012. The Update highlights California’s progress toward meeting the “near-term” 2020 GHG emission reduction goals defined in the initial Scoping Plan. It also evaluates how to align the State’s “longer-term” GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use.

#### 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 current 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:

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

More specifically, the General Plan will direct population capacity to the western portions of the County and reduce 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 the 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 2011 County General Plan EIR outlined a specific mitigation measure (Mitigation Measure CC-1.2) that called for the preparation of a Climate Action Plan (CAP) as discussed above. The County of San Diego developed and adopted (June 2012) the 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 (County 2012a). After the CAP was adopted by the County, a lawsuit was filed by the Sierra Club in April 2013 and the San Diego County Superior Court set aside the approval of the County CAP. Therefore, this analysis does not rely on the CAP.

### 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 and U.S. GHG Inventory

The IPCC has concluded that a stabilization of GHGs at 400 to 450 ppm CO<sub>2</sub>e concentration is required to keep global mean warming below 3.6°F. This is projected to be the threshold necessary to avoid dangerous climate change (AEP 2007).

In 2004, total GHG emissions worldwide were estimated at 20,135 MMT CO<sub>2</sub>e (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<sub>2</sub>, 5.7 percent of CH<sub>4</sub>, 6.8 percent of N<sub>2</sub>O, 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<sub>2</sub>e emissions level was 427 MMT (CARB 2007b). In 2004, California produced 492 MMT CO<sub>2</sub>e emissions. The total U.S. GHG emissions was

7,260 MMT CO<sub>2</sub>e emissions in 2005, of which 84 percent was CO<sub>2</sub> (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<sub>2</sub> equivalent (MMT CO<sub>2</sub>e).

The statewide GHG source emissions totaled 433 MMT CO<sub>2</sub>e in 1990, 458 MMT CO<sub>2</sub>e in 2000, 484 MMT CO<sub>2</sub>e in 2004, and 478 MMT CO<sub>2</sub>e 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<sub>2</sub> (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<sub>2</sub> 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<sub>2</sub>e from the atmosphere in 1990, a net 4.7 MMT CO<sub>2</sub>e in 2000, a net 4.3 MMT CO<sub>2</sub>e in 2004, and a net 4.0 MMT CO<sub>2</sub>e 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<sub>2</sub>e emissions in 2006. The largest contributor of GHGs in the County was on-road transportation (46 percent, or 16 MMT CO<sub>2</sub>e). The second highest contributor was electricity, which contributed 9 MMT CO<sub>2</sub>e (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<sub>2</sub>e (a 26 percent increase over 2006 levels and a 48 percent increase over 1990 levels).

### On-site GHG Inventory

The Proposed Project site is currently vacant with the exception of one occupied residential structure and the equestrian center. In its largely vacant state, the Project site is not a significant 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**

#### Greenhouse Gas Emissions

##### Guidelines for the Determination of Significance

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

Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment or would conflict with an applicable plan, policy, or regulation that was adopted for the purpose of reducing the emissions of greenhouse gases.

Consistent with the County's 2015 GHG Guidance, the Proposed Project would not result in a significant impact to climate change if the Proposed Project would:

Result in a net increase of construction and operational greenhouse gas emissions, either directly or indirectly, and if the project would incorporate mitigation (and Project Design Features) that achieves a 16 percent or greater total reduction compared to unmitigated emissions (Project without Project Design Features).

##### Guideline Source

This guideline is based on the County 2015 GHG Guidance for Climate Change (County 2015).

The County General Plan and Guidance documents provide the overall framework for assessing significance.

The 2015 County Guidance's 16 percent reduction goal 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 GHG Guidance, unmitigated project GHG emissions (without Project Design Features) attributable to a project at full buildout in 2020 are compared to project GHG emissions with mitigation/Project Design Features. "Unmitigated" GHG emissions assume a project complying with applicable standards and regulations at baseline conditions (2008). This would include effects on vehicle emissions due to Pavley I, and effects on energy emissions due to current energy code enforcements and the RPS (to 20 percent).

Proposed Project Design Features 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 with the additional 13 percent referred to as the RES),

LCFS, and Pavley II, which can be included toward the minimum 16 percent mitigation requirement for a project.

The Proposed Project's Project Design Features would be included as D designator Site Plan conditions and verified prior to the issuance of final certificate of occupancy, as follows:

- The Proposed Project would be designed in accordance with the Building Industry Association's California Green Builder 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 Proposed Project would be designed to meet or exceed the 2013 Title 24 energy code requirements. It would accomplish this through improved HVAC systems and duct seals; enhanced ceiling, attic and wall insulation; Energy Star appliances; high-efficiency water heaters (with 19 percent of residential water heating needs accommodated by solar 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 residential units would be designed to be "solar ready."
- The residential units would be designed with sufficient electrical capacity and appropriate circuitry in proximity to parking areas and/or garages, to support residential electric vehicle charging stations.
- The Proposed Project would incorporate advanced plumbing systems, such as 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.
- The Proposed Project's outdoor landscaping plan would minimize turf, maximize drought-tolerant plants, and incorporate weather-based irrigation controllers, multi-programmable irrigation clocks, and high efficiency drip irrigation systems. At the time of final inspection, a manual shall be placed in each building that includes, among other things, information about water conservation.
- The Proposed Project would utilize reclaimed water from the proposed WTWRF for outdoor irrigation.
- In accordance with CALGreen criteria and Assembly Bill (AB) 75, at least 50 percent of on-site construction waste and ongoing operational waste would be diverted from landfills through reuse and recycling. 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 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.

## 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

To serve as a guide for determining when a project triggers the need for a GHG significance determination, the County has established a Screening Level of 900 MT CO<sub>2</sub>e per year for GHG emission analysis (County 2015). This screening threshold is based on a report by the California Air Pollution Control Officers Association (CAPCOA) entitled "CEQA & Climate Change," dated January 2008. The 900 MT CO<sub>2</sub>e per year screening threshold was developed by analyzing the capture of 90 percent or more of future discretionary development for residential and commercial projects. County guidance also recommends including construction emissions (amortized over a typical duration of 20 years) in the screening threshold.

If a project generates more than 900 MT CO<sub>2</sub>e per year, the significance of the GHG emissions are evaluated against the reductions from the “unmitigated” condition. The unmitigated scenario represents a proposed project as described in the application, in compliance with any applicable standards and regulations.\* The County has proposed a threshold of 16 percent below unmitigated conditions to evaluate the significance of GHG emissions attributable to a project. If, compared to the unmitigated project, proposed mitigation would reduce GHG emissions by at least 16 percent, this level of mitigation would represent a fair share of what is necessary statewide to achieve AB 32 target.

The method of quantifying and evaluating GHG emissions in the Project Greenhouse Gases Analysis Report (HELIX 2015f) was based on methodologies recommended in the County Guidance (County 2015). 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 scenarios: first, the Project without GHG-reducing design features (i.e., the unmitigated Project-Equivalent) and; second, the Project with GHG-reducing green building design. Emissions calculations for both methods started with the following land use assumption: the 238.8-acre Proposed Project would include the construction of 326 single-family residential units; park and recreational uses; biological and agricultural open space; and an on-site WTWRF. The first construction phase focuses on overall site grading, the second phase includes infrastructure installation (utility pipelines, roadways, and the construction of the WTWRF), and the third phase addresses “vertical” development of the Project (residential building construction, asphalt paving, and architectural coating).

### Construction Greenhouse Gas Emissions

Construction activities emit GHGs primarily through the combustion of fuels (mostly diesel) in the engines of off-road construction equipment and through the combustion of diesel and gasoline in the on-road construction vehicles and in the commute vehicles of the construction workers. Smaller amounts of GHGs are also emitted through the energy use embodied in any water use (for fugitive dust control) and lighting for the construction activity. Every phase of the construction process, including grading, building, and paving, emits GHGs, in volumes proportional to the quantity and type of construction equipment used. The heavier equipment typically emits more GHGs per hour of use than the lighter equipment because of their greater fuel consumption and engine design.

For the purpose of the analysis, Proposed Project construction was broken down into three main construction phases, assuming that construction duration period would begin in January 2016 and last until mid-2019. The first phase focuses on overall site grading and rock blasting, which would begin in 2016 and last approximately two years. The second phase would be the infrastructure installation, which includes the construction of the WTWRF, utility connections, and roadways. The infrastructure phase would last approximately one year. The third phase addresses “vertical” development of the Project, which includes constructing the residential buildings and coating the pavement/architecture. Each individual neighborhood area would be

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\* For the purposes of the analysis in this report, the unmitigated condition also represents the Project’s GHG emissions without consideration of Project design features or statewide measures that are allowed to be counted towards the 16 percent reduction target per County guidelines.

constructed separately (with the exception of Neighborhoods 1 and 2, which would be constructed together), which would take approximately 2.5 years.

Minor amounts of blasting may be required at the site during initial site preparation and grading activity on site. It is currently unknown the amount of blasting would occur however, it was assumed that approximately two to three blasting event may occur each week. Blasting operations would be conducted by a licensed blasting contractor, in strict compliance with pertinent federal, state and County requirements. All blasting materials would be transported to the site for each blasting sequence and no explosives would be stored at the site.

Construction emissions from the demolition, site grading, and the construction of the residences and WTWRF were calculated using CalEEMod computer program version 2013.2.2 developed by the SMAQMD. The emissions from the construction activities for the off-site roadway areas were calculated using the Road Construction Emissions Model Version, 7.1.5.1 developed by the SMAQMD. Based on the construction schedule, emissions related to the construction of the WTWRF and roadway would occur during 2016; these emissions are included in the total 2016 construction emissions.

As shown in Table 3.1.1-3, *Estimated Construction Emissions*, the Project-related construction activities are estimated to generate approximately 4,056 MT of CO<sub>2</sub>e emissions. 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 203 metric tons per year of CO<sub>2</sub>e emissions to the Project's total. These emissions are added to the expected annual operational GHG emissions below.

#### Unmitigated (Project Without Design Features) Operational Greenhouse Gas Emissions

Direct GHG emissions from operation of the Proposed Project would include those associated with 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, solid waste disposal, and vehicle trips.

Unmitigated GHG emissions represent the Proposed Project without design features in compliance with any applicable standards and regulations that were included in the calculations that support the County's 16 percent reduction requirement, including Pavley I and the 20 percent RPS. Table 3.1.1-4, *Estimated Unmitigated Operational Emissions*, presents the summary of the annual unmitigated emissions for the Project (including emissions associated with the WTWRF and off-road equipment such as generators). The emissions also include the amortized annual construction emissions anticipated for the Project.

Area Emissions. Emissions from residential fireplaces, landscaping equipment, architectural coatings, and household consumer products are considered area sources and were estimated for the Project using CalEEMod.

Energy Emissions. Electricity generation entails the combustion of fossil fuels including natural gas and coal. 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). GHG emissions resulting from electricity generation were estimated using the CalEEMod default values for the 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 kilo British Thermal Units (kBTU) per size metric for each land use subtype; the Proposed Project consists of the following land use subtypes: Single Family Residential, City Park, and General Light Industry.

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. The 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 Proposed Project and then by the electricity generation GHG emissions factors. GHG emissions associated with wastewater generation are calculated in the same manner and are included in the emissions shown for water use.

Solid Waste Emissions. The disposal of solid waste produces GHG emissions from anaerobic decomposition in landfills, incineration, and transportation of waste. A County-wide average waste disposal rate from the California Department of Resources Recycling and Recovery (CalRecycle) was used. 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 rate of 11.4 pounds per unit per day was 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 (regulatory requirement).

Off-road Equipment Emissions. Off-road equipment would be needed during operation of the Proposed Project and would consist of two generators; one would be necessary for the WTWRF and one would be needed for the fire pump station. This equipment requires diesel fuel; associated GHG emissions were estimated using CalEEMod.

Transportation Emissions. GHG emissions from vehicles come from the combustion of fossil fuels (primarily gasoline and diesel) in vehicle engines. The quantity/type of transportation fuel consumed, amount of vehicle trips, and trip distances that motorists travel are relevant in analyzing GHG emissions from vehicles.

The Proposed Project without GHG-reducing design features would generate 3,786 ADT (LLG 2015). CalEEMod assumed an annual total of 10,815,031 miles would be traveled each year by Project residents, visitors to the public neighborhood park, and WTWRF workers. This total annual VMT was based on CalEEMod default trip lengths, and the gross daily ADT

multiplied by 365 days per year (to obtain an annual value for the Project). The unmitigated Project would result in vehicle-related emissions of 4,534 MT CO<sub>2</sub>e annually.

In summary, as shown in Table 3.1.1-4, the unmitigated Project would result in total GHG emissions of 6,883 MT CO<sub>2</sub>e per year.

#### Operational Greenhouse Gas Emissions with Implementation of Applicable Regulations and Project Design Features

Per the County's Guidance, projects may take a reduction credit on vehicle emissions due to LCFS, Pavley II, and effects on energy emissions due to current energy code enforcements and the RES. Table 3.1.1-5, *Estimated Greenhouse Gas Emissions Reductions from Applicable Regulations*, summarizes the reduction in emissions from applicable regulations.

The Proposed Project would incorporate design features to conserve energy and water; promote recycling and waste reduction; and encourage pedestrian, bicycle and equestrian mobility. Such Project Design Features are presented in Table 1-4 of this EIR. These measures can also be counted towards the 16 percent reduction goal, and associated emissions reductions are summarized in Table 3.1.1-6, *Estimated Greenhouse Gas Emissions Reductions from Project Design Features*. 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, *Estimated Operational Emissions with Applicable Regulations and Project Design Features*, presents anticipated Project GHG emissions with the state-mandated measures and Project Design Features.

Energy Emissions. The RES (up to 13 percent) can be included toward the minimum 16 percent mitigation requirement. Therefore, the electricity emissions calculated for the unmitigated Project in the CalEEMod model were reduced by an additional 11.4 percent to account for implementation of the RES.

The Proposed Project would meet the 2013 California Energy Code's energy efficiency standards thereby exceeding the 2008 California Energy Code's energy efficiency standards by 15 percent and would implement the following energy efficiency measures: improved 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. The residential units would also be designed with sufficient electrical capacity and appropriate circuitry in proximity to parking areas and/or garages, to support residential electric vehicle charging stations.

Additionally, the Proposed Project would include solar PV systems which would provide a minimum of 30 percent of residential electricity needs in each neighborhood. Using electricity generated from PV systems displaces electricity demand which would ordinarily be supplied by the local utility. Since zero GHG emissions are associated with electricity generation from PV systems, the GHG emissions reductions from this measure are equivalent to the emissions that would have been produced had electricity been supplied by the local utility. According to the Scoping Plan, the California Solar Initiative would reduce the GHG emissions statewide by

approximately 10 percent. By using the same percent GHG reduction, it was conservatively assumed that approximately 30 percent of the total electricity demand for the Proposed Project would be provided by the PV system. The Proposed Project's solar PV would result in a 19 percent reduction in GHG emissions by 253 MT CO<sub>2</sub>e. With the implementation of the statewide 13 percent RES, energy efficiency improvements, and roof solar panels, the Project would result in the indirect emission of 906 MT CO<sub>2</sub>e annually from energy usage.

Water Use Emissions. Proposed Project water emissions were adjusted to account for the recent 2013 CALGreen mandate to reduce water consumption by up to 20 percent. The installation of the low flow water features would result in the reduction of GHG emissions associated with water usage by approximately 14 percent, resulting in an annual reduction of 29 MT CO<sub>2</sub>e.

Additionally, the Proposed Project would utilize reclaimed water from the WTWRF for landscape irrigation. This feature would greatly reduce the energy associated with the conveyance of water from outside sources. Based on California Air Pollution Control Officers Association (CAPCOA) Measure WSW-1, this feature would reduce emissions associated with outdoor water use by 65 percent, resulting in a reduction of 55 MT CO<sub>2</sub>e per year (CAPCOA 2010).

Solid Waste Emissions. AB 75 bill requires diversion of at least 50 percent of the solid waste from landfills and implementation of county-wide solid waste recycling practices to achieve this goal would result in a 50 percent reduction from Project-generated solid waste (95 MT CO<sub>2</sub>e). This would result in the emission of 95 MT CO<sub>2</sub>e annually from solid waste.

Transportation Emissions. As discussed above, Pavley II and LCFS can be included toward the minimum 16 percent reduction requirement. The LCFS (9.51 percent) and Pavley II (2.38 percent) would result in 12 percent reduction in vehicular emissions. This would result in the emission of 3,995 MT CO<sub>2</sub>e annually from the Project.

### *Summary*

As shown in Tables 3.1.1-5 and 3.1.1-6, state-mandated measures and Proposed Project design features would result in annual emission reductions of 731 MT CO<sub>2</sub>e and 436 MT CO<sub>2</sub>e, respectively. Table 3.1.1-7 shows that with these reductions, the Proposed Project would result in annual GHG emissions of 5,717 MT CO<sub>2</sub>e per year. This would represent a reduction of 17 percent when compared to the 6,883 MT CO<sub>2</sub>e per year estimated for the unmitigated Project without design features.

As evaluated per the County's Guidance, the Proposed Project would achieve the County's GHG reduction goals, 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

### Analysis

The regulatory plans and policies discussed in Subsection 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; and so forth.

### *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 in Section 3.1.1.1. As described in Section 3.1.1.2, the 16 percent reduction in GHG emissions goal relative to an unmitigated project is derived from CARB's 2010 updated 2020 emissions projections and 2011 Scoping Plan. The revised 2011 projections and Scoping Plan account for less overall growth and less energy/fuel consumption due to the long-term dampened economic conditions. The Project, by achieving a 16 percent reduction goal relative to an unmitigated project, would be considered consistent with the 2011 Scoping Plan and AB 32's 2020 reduction target.

### *Local Plans*

As discussed above, the Proposed Project would achieve GHG reductions through green building design that includes improved energy efficiency, water conservation, sustainable materials use, and waste reduction. Verification and commissioning of these features would occur through independent third-party inspection and diagnostics.

As a condition of the D-designator Site Plan, however, the Proposed Project would be required to improve energy efficiency to meet or exceed the 2013 Title 24 energy code requirements, reduce indoor water consumption by up to 20 percent, and have at least 30 percent of residential electricity generated by solar panels. Verification of increased water and energy efficiencies would be demonstrated based on a performance approach, using a CEC-approved water and energy compliance software program, in the Title 24 Compliance Reports provided by the Project applicant to the County in accordance with the D-designator Site Plan prior to issuance of the building permit.

The Proposed Project would meet the 16 percent reduction goal relative to an unmitigated project without Project Design Features and would thus be consistent with the County's General Plan goals for private land use development. The Project's consistency with specific General Plan Conservation Element policies is analyzed in Section 3.1.4, *Land Use*.

### Summary

The Proposed Project would not conflict with applicable plans because 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 Features identified above, impacts associated with GHG emissions would be **less than significant**.

### Horizon Year (2030 and 2050) Emissions Inventories

#### Analysis

Beyond Project buildout, the Project's GHG emissions would reduce with the continued implementation of the 2020 reduction strategies and increased stringency of state reduction measures based on actions included in the 2014 Scoping Plan related to energy use and transportation that transition the state towards meeting its longer term GHG emission reduction goals. In addition to the 2020 reduction measures, the following assumptions were included in the reduced 2030 GHG emissions:

- Mobile source reductions resulting from fleet wide emissions improvements over current standards were estimated using the EMFAC2014 emissions inventories. Emissions were modeled using Project specific assumptions for fleet mix and VMT as detailed the CalEEMod output files provided in Appendix G.
- Through compliance with AB 341, a total of 75 percent of the Project's solid waste would be diverted from landfills.

The emissions by source for 2030 were calculated by modeling 2030 mobile source emissions using EMFAC2014 and applying a percent reduction to the 2020 emissions inventory for the waste reduction measure. Table 3.1.1-8, *Estimated 2030 Operational Emissions*, summarizes the 2030 emissions as broken down by emissions category. Construction emissions are included in the summary provided in Table 3.1.1-8 and are expected to be fully amortized by 2040.

Beyond 2030, the Project's GHG emissions would reduce with the continued implementation of the 2020 reduction strategies and increased stringency of state reduction measures, primarily associated with mobile-sources. The following assumption was included in the reduced 2050 GHG emissions:

- Mobile source reductions resulting from fleet wide emissions improvements over current standards were estimated using the EMFAC2014 emissions inventories. Emissions were modeled using Project specific assumptions for fleet mix and VMT as detailed the CalEEMod output files provided in Appendix G.

Mobile source emissions for 2050 were calculated by modeling 2030 through 2050 mobile source emissions using EMFAC2014. Table 3.1.1-9, *Estimated 2050 Operational Emissions*, summarizes the 2050 emissions as broken down by emissions category.

Through implementation of the 2014 Scoping Plan Measures, it is expected that additional reductions would occur. Strengthening of the LCFS and expansion of the zero emissions vehicles program will likely result in further reductions to mobile source emissions. Additionally, the RPS would likely continue beyond the 2020 goal of 33 percent. However, because the design of any such measures has yet to be finalized, any reduction credit associated with these measures has not been included. As such, the analysis presented above reflects a conservative set of assumptions.

### Summary

As shown in Tables 3.1.1-8 and 3.1.1-9, Project emissions would continue to decrease beyond 2030 and 2050 through implementation of 2014 Scoping Plan Measures.

#### **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, the Proposed Project would have **less than significant** impacts related to GHG emissions.

<b>Table 3.1.1-1 GLOBAL WARMING POTENTIALS (GWP) AND ATMOSPHERIC LIFETIMES (years)</b>		
<b>Gas</b>	<b>Atmospheric Lifetime (years)</b>	<b>100-year GWP*</b>
CO <sub>2</sub>	50-200	1
CH <sub>4</sub> **	9-15	21
N <sub>2</sub> O	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 <sub>4</sub>	50,000	6,500
C <sub>2</sub> F <sub>6</sub>	10,000	9,200
C <sub>4</sub> F <sub>10</sub>	2,600	7,000
C <sub>6</sub> F <sub>14</sub>	3,200	7,400
SF <sub>6</sub>	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<sub>2</sub> is not included.

<b>Table 3.1.1-2 CARB SCOPING PLAN RECOMMENDED GHG REDUCTION MEASURES</b>	
<b>Recommended Reduction Measures</b>	<b>Estimated 2020 Reductions (MMT CO<sub>2</sub>e)/Percent<sup>2</sup></b>
California Light-Duty Vehicle Greenhouse Gas Standards Implement Pavley I Standards <sup>4</sup> <ul style="list-style-type: none"> <li>• Develop Pavley II light-duty vehicle standards</li> </ul>	31.7 (18.22%)
Energy Efficiency <ul style="list-style-type: none"> <li>• Building/appliance efficiency, new programs, etc.</li> <li>• Increase CHP generation by 30,000 GWh</li> <li>• Solar Water Heating (AB 1470 goal)</li> </ul>	26.3 (15.11%)
Renewables Portfolio Standard (33% by 2020) <sup>4</sup>	21.3 (12.24%)
Low Carbon Fuel Standard	15 (8.62%)
Regional Transportation-Related GHG Targets <sup>1</sup>	5 (2.87%)
Vehicle Efficiency Measures	4.5 (2.59%)
Goods Movement <ul style="list-style-type: none"> <li>• Ship Electrification at Ports</li> <li>• System-wide Efficiency Improvements</li> </ul>	3.7 (2.13%)
Million Solar Roofs	2.1 (1.21%)
Medium/Heavy Duty Trucks <ul style="list-style-type: none"> <li>• Heavy-Duty Vehicle GHG Reduction (Aerodynamic Efficiency)</li> <li>• Medium- and Heavy-duty Vehicle Hybridization</li> </ul>	1.4 (0.80%)
High Speed Rail	1.0 (<1.0%)
Industrial Measures (for sources covered under cap & trade program) <ul style="list-style-type: none"> <li>• Refinery Measures</li> <li>• Energy Efficiency and Co-benefits Audits</li> </ul>	0.3 (<0.5%)
Additional Reductions Necessary to Achieve the Cap	34.4 (20%)
Industrial Measures (for sources not covered under cap & trade program) <ul style="list-style-type: none"> <li>• Oil and Gas Extraction and Transmission</li> </ul>	1.1 (<1%)
High Global Warming Potential Gas Measures	20.2 (12%)
Sustainable Forests	5.0 (3%)
Recycling and Waste (landfill methane capture)	1.0 (0.6%)
<b>TOTAL ESTIMATED REDUCTIONS COUNTED TOWARDS 2020 TARGET<sup>3</sup></b>	<b>174</b>
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 2008b

<sup>1</sup> 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.

<sup>2</sup> Percentages are relative to the total of 174 MMT CO<sub>2</sub>e, and may not total 100 due to rounding.

<sup>3</sup> The total reduction for the recommended measures slightly exceeds the 169 MMT CO<sub>2</sub>e of reductions estimated in CARB's BAU 2020 Emissions Forecast made in 2008. This is the net effect of adding several measures and adjusting the emissions reduction estimates for some other measures.

<sup>4</sup> CARB's 2010 revised BAU 2020 projections of 507 MMT CO<sub>2</sub>e, based on the economic downturn and incorporation of Pavley I and 20% RPS, indicate that the total reduction for the recommended measures is now 80 MMT CO<sub>2</sub>e.

<b>Table 3.1.1-3 ESTIMATED CONSTRUCTION EMISSIONS (MT/year)</b>				
<b>Year</b>	<b>CO<sub>2</sub></b>	<b>CH<sub>4</sub></b>	<b>N<sub>2</sub>O</b>	<b>CO<sub>2</sub>e</b>
	<b>MT/year</b>			
2016	979	0.23	0.05	1,000
2017	1,888	0.47	0.05	1,913
2018	568	0.15	0.00	571
2019	569	0.13	0.00	572
<b>TOTAL CONSTRUCTION GHG EMISSIONS</b>				<b>4,056</b>

Source: HELIX 2015f

<b>Table 3.1.1-4 ESTIMATED UNMITIGATED OPERATIONAL EMISSIONS (MT/year)</b>				
<b>Source</b>	<b>CO<sub>2</sub></b>	<b>CH<sub>4</sub></b>	<b>N<sub>2</sub>O</b>	<b>CO<sub>2</sub>e</b>
	<b>MT/year</b>			
Amortized Construction	200	0.05	0.01	203
Area	241	0.01	0.00	242
Energy	1,348	0.04	0.02	1,354
Mobile	4,490	0.17	0.00	4,534
Solid Waste	85	5.02	0.00	190
Water Usage	187	0.88	0.02	213
Off-road Equipment	147	0.01	0.00	147
<b>TOTAL</b>	<b>6,697</b>	<b>6.19</b>	<b>0.05</b>	<b>6,883</b>

Source: HELIX 2015f

Note: Mobile source emissions were adjusted to remove the GHG reductions from the LCFS.

<b>Table 3.1.1-5 ESTIMATED GREENHOUSE GAS EMISSIONS REDUCTIONS FROM APPLICABLE REGULATIONS (MT/year)</b>				
<b>Measure</b>	<b>Source</b>	<b>Percent Reduction from Unmitigated<sup>a</sup></b>	<b>Unmitigated CO<sub>2</sub>e<sup>b</sup></b>	<b>CO<sub>2</sub>e Reduced<sup>c</sup></b>
Renewable Electricity Standard	Energy	11.4	844 <sup>d</sup>	96
Executive Order S-1-07 (Low Carbon Fuel Standard)	Mobile	9.51	4,534	431
Assembly Bill 1493 (Pavley II Standards)	Mobile	2.38	4,534	108
AB 75	Waste	50.0	190	95
<b>Subtotal – MTCO<sub>2</sub>e Reduced</b>				<b>731</b>

Source: HELIX 2015f

<sup>a</sup> Source: CARB 2014

<sup>b</sup> Emissions available from Table 3.1.1-4, *Estimated Unmitigated Operational Emissions*, by source.

<sup>c</sup> CO<sub>2</sub>e Reduction is quantified by multiplying the Percent Reduction from Unmitigated by the Unmitigated CO<sub>2</sub>e value.

<sup>d</sup> Emissions related to natural gas were removed, so that only electricity-related GHG emissions were included.

Note: Totals may not add up exactly due to rounding.

<b>Table 3.1.1-6 ESTIMATED GREENHOUSE GAS EMISSIONS REDUCTIONS FROM PROJECT DESIGN FEATURES (MT/year)</b>					
<b>Feature</b>	<b>Source</b>	<b>2010 CAPCOA<sup>a</sup> Report Measure</b>	<b>Percent Reduction from Unmitigated</b>	<b>Unmitigated CO<sub>2</sub>e</b>	<b>CO<sub>2</sub>e Reduced</b>
Energy Efficient Features	Energy	BE-1	7.2	1,354	98
On-site Renewables	Energy	AE-1	30.0	844	253
Low Flow Fixtures	Water	WUW-1	13.9	213	29
Reclaimed Water	Water	WSW-1	65.0	85	55
<b>Subtotal – MTCO<sub>2</sub>e Reduced</b>					<b>436</b>

Source: HELIX 2015f

<sup>a</sup> California Air Pollution Control Officers Association

Note: Totals may not add up exactly due to rounding.

<b>Table 3.1.1-7</b>				
<b>ESTIMATED OPERATIONAL EMISSIONS WITH APPLICABLE REGULATIONS AND PROJECT DESIGN FEATURES (MT/year)</b>				
<b>Source</b>	<b>CO<sub>2</sub></b>	<b>CH<sub>4</sub></b>	<b>N<sub>2</sub>O</b>	<b>CO<sub>2</sub>e</b>
	<b>MT/year</b>			
Amortized Construction	200	0.05	0.01	203
Area	241	0.01	0.00	242
Energy	902	0.03	0.01	906
Mobile	3,993	0.15	0.00	3,995
Solid Waste	42	2.51	0.00	95
Water Usage	114	0.49	0.01	128
Off-road Equipment	147	0.01	0.00	147
<b>TOTAL</b>	<b>5,639</b>	<b>3.25</b>	<b>0.03</b>	<b>5,717</b>

Source: HELIX 2015f

<b>Table 3.1.1-8</b>				
<b>ESTIMATED 2030 OPERATIONAL EMISSIONS (MT/yr)</b>				
<b>Source</b>	<b>CO<sub>2</sub></b>	<b>CH<sub>4</sub></b>	<b>N<sub>2</sub>O</b>	<b>CO<sub>2</sub>e</b>
	<b>MT/yr</b>			
Area	241	0.01	0.00	242
Energy	902	0.03	0.01	906
Mobile	3,723	0.12	0.00	3,725
Solid Waste	21	1.26	0.00	48
Water Usage (including Wastewater Treatment)	114	0.49	0.01	128
Off-road Equipment	147	0.01	0.00	147
Construction	203	--	--	203
<b>TOTAL</b>	<b>5,148</b>	<b>1.91</b>	<b>0.03</b>	<b>5,196</b>

Source: HELIX 2015f

<b>Table 3.1.1-9</b>				
<b>ESTIMATED 2050 OPERATIONAL EMISSIONS (MT/yr)</b>				
<b>Source</b>	<b>CO<sub>2</sub></b>	<b>CH<sub>4</sub></b>	<b>N<sub>2</sub>O</b>	<b>CO<sub>2</sub>e</b>
	<b>MT/yr</b>			
Area	241	0.01	0.00	242
Energy	902	0.03	0.01	906
Mobile	3,214	0.09	0.00	3,216
Solid Waste	21	1.26	0.00	48
Water Usage (including Wastewater Treatment)	114	0.49	0.01	128
Off-road Equipment	147	0.01	0.00	147
<b>TOTAL</b>	<b>4,638</b>	<b>1.89</b>	<b>0.03</b>	<b>4,687</b>

Source: HELIX 2015f