

### 3.1.3 Greenhouse Gas Emissions

HELIX prepared the Greenhouse Gas Analyses Report (HELIX 2017d) 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. The Greenhouse Gas Analyses Report is summarized in the following discussion, with the complete report included as Appendix J of this EIR.

#### 3.1.3.1 Existing Conditions

##### Background

Climate change refers to any substantial change in measures of climate (such as temperature, precipitation, or wind) lasting for decades or longer. The Earth's climate has changed many times during the planet's history, including events ranging from ice ages to long periods of warmth. Historically, natural factors such as volcanic eruptions, changes in the Earth's orbit, and the amount of energy released from the sun have affected the Earth's climate. Beginning late in the 18<sup>th</sup> century, human activities associated with the Industrial Revolution have changed the composition of the atmosphere. The Industrial Revolution resulted in an increase in the combustion of carbon-based fuels such as wood, coal, oil, natural gas, and biomass; and 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 (GHGs), influence the amount of heat that is trapped in the Earth's atmosphere. Because climate change is caused by the collective of human actions taking place throughout the world, it is inherently a global or cumulative issue.

GHGs are gases that trap heat in the atmosphere, analogous to the way a greenhouse retains heat. Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs, such as HFC-23), fluorocarbons or perfluorocarbons (PFCs, such as CF<sub>4</sub>), and sulfur hexafluoride (SF<sub>6</sub>). The accumulation of GHGs in the atmosphere regulates the Earth's temperature. The potential of a gas to trap heat and warm the atmosphere is measured by its global warming potential (GWP). GHGs either break down 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, or its "atmospheric lifetime." To account for these effects, GWPs are calculated over a 100-year time horizon (U.S. Environmental Protection Agency [USEPA] 2014b). Because of its relative abundance in the atmosphere and its relatively long atmospheric lifetime, CO<sub>2</sub> has been designated the reference gas for comparing GWPs. Thus, the 100-year GWP of CO<sub>2</sub> is equal to one (see Table 3.1.3-1, *Global Warming Potentials and Atmospheric Lifetimes of Common GHGs*).

##### Types of GHGs

California Health and Safety Code Section 38505(g) defines GHGs to include the following compounds: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, chlorofluorocarbons (CFCs), HFCs, and SF<sub>6</sub>. Descriptions of these compounds and their sources are provided below.

Carbon dioxide 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. As of December 2014, global concentrations of CO<sub>2</sub> exceeded 399 parts per million (ppm) (National Oceanic and Atmospheric Administration [NOAA] 2015). Some scientific estimates predict 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, and that this would result in an average global temperature rise of at least 7.2°Fahrenheit (°F) (Intergovernmental Panel on Climate Change [IPCC] 2007).

Methane (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.

Nitrous oxide (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 racecars. During combustion, NO<sub>x</sub> (NO<sub>x</sub> is a generic term for mono-nitrogen oxides such as 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. 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.

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 that is unlike the other GHGs as 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 VOCs) to global warming (CARB 2006).

A summary of the most common naturally occurring and artificial GHGs is provided in Table 3.1.3-1. Of the gases listed in Table 3.1.3-1, 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 (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. In addition to regulations, several executive orders have been identified below. As executive orders lack legislative action, they are not fully enforceable as regulations and are included for informational purposes.

#### Federal

##### *Federal Clean Air Act*

The U.S. Supreme Court ruled in April 2007, in *Massachusetts v. U.S. Environmental Protection Agency*, that CO<sub>2</sub> is an air pollutant, as defined under the Clean Air Act (CAA), and that the USEPA has the authority to regulate emissions of GHGs. The USEPA announced that GHGs (including CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFC, PFC and SF<sub>6</sub>) threaten the public health and welfare of the American people. This action was a prerequisite to finalizing the USEPA's proposed GHG emissions standards for light-duty vehicles, which were jointly proposed by the USEPA and the United States Department of Transportation's National Highway Traffic Safety Administration in September 2009.

##### *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 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. Rulemaking to adopt these new standards was completed in 2010. California agreed to allow automakers who show compliance with the national program to also be deemed in compliance with State requirements. The federal government issued new standards in summer 2012 for model years 2017–2025, which will require a fleet average in 2025 of 54.5 mpg.

#### State

##### *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, was 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. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in GHG emissions.

The Title 24 standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The latest update to the Title 24 standards occurred in 2016 and went into effect January 1, 2017. The 2016 update to the Building Energy Efficiency Standards focuses on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings. The most significant efficiency improvements to the residential Standards include improvements for attics, walls, water heating, and lighting. The Standards are divided into three basic sets. First, there is a basic set of mandatory requirements that apply to all buildings. Second, there is a set of performance standards – the energy budgets – that vary by climate zone (of which there are 16 in California) and building type; thus the Standards are tailored to local conditions. Finally, the third set constitutes an alternative to the performance standards, which is a set of prescriptive packages that are basically a recipe or a checklist compliance approach.

*California Code of Regulations, Title 24, Part 11 (CALGreen)*

The California Green Building Standards Code (CALGreen Code; 24 CCR, Part 11) is a code with mandatory requirements for new residential and nonresidential buildings (including buildings for retail, office, public schools, and hospitals) throughout California. The code is Part 11 of the California Building Code in Title 24 of the CCR (CBC 2016). The current 2016 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings went into effect on January 1, 2017.

The development of the CALGreen Code is intended to: (1) cause a reduction in GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the directives by the Governor. In short, the code is established to reduce construction waste; make buildings more efficient in the use of materials and energy; and reduce environmental impact during and after construction.

The CALGreen Code contains requirements for storm water control during construction; construction waste reduction; indoor water use reduction; material selection; natural resource conservation; site irrigation conservation; and more. The code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for the verification that all building systems, like heating and cooling equipment and lighting systems, are functioning at their maximum efficiency.

*Executive Order S-3-05*

Executive Order (EO) S-3-05, signed by Governor Schwarzenegger in June 2005, calls for a reduction in GHG emissions to year 1990 levels by the year 2020, and for an 80 percent reduction in GHG emissions by the year 2050. EO S-3-05 also calls for the California Environmental Protection Agency (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*” (California Climate Change Center 2006), concluded that, under the report’s emissions scenarios, the impacts of

global warming in California are anticipated to include, but not be limited to: public health, biology, rising sea levels, hydrology and water quality, and water supply.

#### *Assembly Bill 32*

The California Global Warming Solutions Act of 2006, widely known as Assembly Bill (AB) 32, requires 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. California needs to reduce GHG emissions by approximately 15.3 percent below CARB's latest business-as-usual (BAU) predictions to achieve this goal (CARB 2014b).

The bill requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions. In January 2011, specific GHG emission limits and reduction measures in line with AB 32 were adopted. As of October 2011, 18 of 30 CARB regulations had been approved, including nine discrete early actions.

#### *Executive Order B-30-15*

On April 29, 2015, EO B-30-15 established a California GHG reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG reduction targets with those of leading international governments, including the 28-nation European Union. California is on track to meet or exceed the target of reducing GHG emissions to 1990 levels by 2020, as established in AB 32. California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal established by EO S-3-05 of reducing emissions 80 percent under 1990 levels by 2050.

#### *Senate Bill 32*

In September 2016, the Governor signed SB 32 (Pavley; California Global Warming Solutions Act of 2006: emissions limit) into law. SB 32 would require that CARB ensure that statewide GHG emissions are reduced to 40 percent below the 1990 level by 2030, thereby codifying the attainment of the 2030 reduction goal identified in EOs B-30-15 and S-3-05. CARB was directed to update the Scoping Plan to reflect the 2030 target, and therefore, is moving forward with the update process. However, currently there are no proposed or adopted significance thresholds for analyzing post-2020 emissions for development projects in California, there are no adopted statewide or local plans to reduce emissions 40 percent below 1990 levels by 2030, and the regulatory framework to achieve the 2030 target is still being developed.

#### *Assembly Bill 197*

A condition of approval for SB 32 was the passage of AB 197. AB 197 requires that CARB consider the social costs of GHG emissions and prioritize direct reductions in GHG emissions at mobile sources and large stationary sources. AB 197 also gives the California legislature more oversight over CARB through the addition of two legislatively appointed members to the CARB Board and the establishment a legislative committee to make recommendations about CARB programs to the legislature.

### *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 to the California Integrated Waste Management Board of an annual report describing the diversion rates.

### *Assembly Bill 341*

The state legislature enacted AB 341 (California Public Resource Code Section 42649.2), increasing the diversion target to 75 percent statewide. AB 341 requires all businesses and public entities that generate 4 cubic yards or more of waste per week to have a recycling program in place. In addition, multi-family apartments with five or more units are also required to implement a recycling program. The final regulation was approved by the Office of Administrative Law (OAL) on May 7, 2012, and went into effect on July 1, 2012.

### *Assembly Bill 1493*

In response to the transportation sector accounting for a substantial portion of California's CO<sub>2</sub> emissions, AB 1493 (also referred to as Pavley or the California Light-Duty Vehicle Greenhouse Gas Standards) was enacted July 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 (years 2009 to 2012) standards were anticipated to reduce GHG emissions by approximately 22 percent compared with the emissions from the year 2002 fleet, while the mid-term (years 2013 to 2016) standards are expected to 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.

### *Senate Bill 97*

SB 97 required the Office of Planning and Research (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 in December 2009. The 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. 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 CEQA Guidelines did not establish a threshold of significance.

#### *Senate Bill 375*

SB 375 aligns regional transportation planning efforts, regional GHG reduction targets, and affordable housing allocations. Metropolitan Planning Organizations (MPOs) such as the San Diego Association of Governments (SANDAG) are required to adopt a Sustainable Communities Strategy, within the Regional Transportation Plan (RTP), the goal of which is to establish a development plan for the region, which, after considering transportation measures and policies, will achieve, if feasible, the GHG reduction targets.

Pursuant to Government Code Section 65080(b)(2)(K), a sustainable communities strategy does not: (i) regulate the use of land; (ii) supersede the land use authority of cities and counties; or (iii) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with it. Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the state-mandated housing element process.

Qualified projects consistent with an approved Sustainable Communities Strategy or Alternative Planning Strategy categorized as "transit priority projects" would receive incentives to streamline CEQA processing.

#### *Executive Order S-1-07*

EO S-1-07, signed by Governor Schwarzenegger January 2007, directs that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by the year 2020. It orders that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California and directs the CARB to determine whether a LCFS can be adopted as a discrete early action measure pursuant to AB 32. CARB approved the LCFS as a discrete early action item with a regulation adopted and implemented in April 2010. Although challenged in 2011, the Ninth Circuit reversed the District Court's opinion and rejected arguments that implementing LCFS violates the interstate commerce clause in September 2013. CARB is therefore continuing to implement the LCFS statewide.

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

On December 11, 2008, the CARB adopted the 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. Measures applicable to development projects include those related to energy-efficiency building and appliance standards, the use of renewable sources for electricity generation, regional transportation targets, and green building strategy. Relative to transportation, the Scoping Plan includes nine measures or recommended actions related to reducing vehicle miles traveled and vehicle GHGs through fuel and efficiency measures. These measures would be implemented statewide rather than on a project-by-project basis.

The CARB released the First Update to the Climate Change Scoping Plan in May 2014 to provide information on the development of measure-specific regulations and to adjust

projections in consideration of the economic recession (CARB 2014a). To determine the amount of GHG emission reductions needed to achieve the goal of AB 32 (i.e., 1990 levels by 2020) CARB developed a forecast of the AB 32 Baseline 2020 emissions, which is an estimate of the emissions expected to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. CARB estimated the AB 32 Baseline 2020 to be 509 MMT CO<sub>2</sub>e. The Scoping Plan's current estimate of the necessary GHG emission reductions is 78 MMT CO<sub>2</sub>e (CARB 2014b). This represents an approximately 15.32 percent reduction. The CARB is forecasting that this would be achieved through the following reductions by sector: 25 MMT CO<sub>2</sub>e for energy; 23 MMT CO<sub>2</sub>e for transportation; 5 MMT CO<sub>2</sub>e for high-GWP GHGs, and 2 MMT CO<sub>2</sub>e for waste. The remaining 23 MMT CO<sub>2</sub>e would be achieved through Cap-and-Trade Program reductions. This reduction is flexible; if CARB receives new information and changes the other sectors' reductions to be less than expected, the agency can increase the Cap-and-Trade reduction (and vice versa).

In response to EO B-30-15 and SB 32, all state agencies with jurisdiction over sources of GHG emissions were directed to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 targets. CARB was directed to update the Scoping Plan to reflect the 2030 target, and therefore, is moving forward with the update process. The mid-term target is critical to help frame the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure needed to continue driving down emissions. CARB is moving forward with a second update to the Scoping Plan to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32. The 2017 Climate Change Scoping Plan Update, Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target, was released in draft form on January 20, 2017. The second update to the Scoping Plan is scheduled to be finalized in June 2017.

## Local

### *General Plan*

The San Diego 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 vehicle miles traveled (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 includes a number of policies in the Conservation Element that encourage the design of new buildings that incorporate principles of sustainability and reduce vehicle and utility usage.

### *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). The County developed and adopted the CAP in 2012 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.

### *Green Building Incentive Program*

The County has a Green Building Incentive Program designed to promote the use of resource efficient construction materials, water conservation and energy efficiency in new and remodeled residential and commercial buildings. The program offers incentives of reduced plan check turnaround time and a 7.5-percent reduction in plan check and building permit fees for projects meeting minimum program requirements, which include options for natural resource conservation, water conservation, and energy conservation.

### *Construction and Demolition Recycling Ordinance*

The County has a construction and demolition recycling ordinance that is designed to divert debris from construction and demolition projects away from landfill disposal in the unincorporated County of San Diego. The ordinance requires that 90 percent of inerts and 70 percent of all other materials from a project be recycled. In order to comply with the ordinance, applicants must submit a Construction and Demolition Debris Management Plan and a fully refundable Performance Guarantee prior to building permit issuance.

### *San Diego Association of Governments: San Diego Forward: The Regional Plan*

The Regional Plan (SANDAG 2015) is the long-range planning document developed to address the region's housing, economic, transportation, environmental, and overall quality-of-life needs. The Regional Plan establishes a planning framework and implementation actions that increase the region's sustainability and encourage "smart growth while preserving natural resources and limiting urban sprawl." The Regional Plan encourages the regions and the County to increase residential and employment concentrations in areas with the best existing and future transit connections, and to preserve important open spaces. The focus is on implementation of basic smart growth principles designed to strengthen the integration of land use and transportation.

At the core of the Regional Plan is a Sustainable Communities Strategy that charts a course towards lowering GHG emissions and includes the following five building blocks:

- A land use pattern that accommodates our region's future employment and housing needs, and protects sensitive habitats, cultural resources, and resource areas.
- A transportation network of public transit, Managed Lanes and highways, local streets, bikeways, and walkways built and maintained with reasonably expected funding.
- Managing demands on our transportation system (also known as Transportation Demand Management, or TDM) in ways that reduce or eliminate traffic congestion during peak periods of demand.
- Managing our transportation system (also known as Transportation System Management, or TSM) through measures that maximize the overall efficiency of the transportation network.

- Innovative pricing policies and other measures designed to reduce the number of miles people travel in their vehicles, as well as traffic congestion during peak periods of demand

The Regional Plan includes the following set of principles that will guide the development of the region's future transportation network:

- The SANDAG investment plan will be built with financial resources that are reasonably expected to be available between now and 2050.
- A more efficient transportation network will be achieved through two key strategies: effectively managing the overall system (TSM) and effectively managing demands on the system (TDM) with innovative technologies be integrated into both. The result will be maximized efficiency in the transportation network, which ultimately can lower GHG emissions.
- Managing parts of the network, such as adding Managed Lanes and transit only lanes on freeways, which encourage people to carpool and use public transit to bypass bottlenecks.
- The road toward a more sustainable San Diego region should include vehicles that use cleaner, alternative sources of energy with SANDAG playing an important role in promoting this transition.

### Existing Greenhouse Gas Emission Levels

#### Worldwide and National 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, which is assumed to be necessary to avoid dangerous climate change (Association of Environmental Professionals [AEP] 2007).

In the year 2012, total GHG emissions worldwide were estimated at 44,816 MMT of CO<sub>2</sub>e emissions (World Resources Institute 2017). The United States contributed the second largest portion of GHG emissions (behind China) at 14 percent of global emissions. The total GHG emissions from the United States were 6,673 MMT CO<sub>2</sub>e in 2013 (USEPA 2015). On a national level, approximately 27 percent of GHG emissions were associated with transportation and about 31 percent were associated with electricity generation.

#### State and Regional GHG Inventory

CARB performs statewide GHG inventories. The inventory is divided into six broad sectors; agriculture and forestry, commercial, electricity generation, industrial, residential, and transportation. Emissions are quantified in MMT CO<sub>2</sub>e.

Statewide GHG source emissions totaled 433 MMT CO<sub>2</sub>e in 1990, 469 MMT CO<sub>2</sub>e in 2000, 456 MMT CO<sub>2</sub>e in 2010, and 459 MMT CO<sub>2</sub>e in 2013. According to data from CARB, it appears that statewide GHG emissions peaked in 2004 (CARB 2014c). Transportation-related

emissions consistently contribute the most GHG emissions, followed by electricity generation and industrial emissions.

According to the San Diego County GHG Inventory that was prepared by the School of Law Energy Policy Initiative Center (EPIC) at the University of San Diego in 2013, San Diego County emitted 33 MMT CO<sub>2</sub>e in 2010. The largest contributor of GHG in San Diego County was the on-road transportation category, which comprised 43 percent (14 MMT CO<sub>2</sub>e) of the total amount. The second highest contributor was the electricity category, which contributed 8 MMT CO<sub>2</sub>e, or 25 percent of the total. Together the on-road transportation and electricity categories comprised 68 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 the year 2020, under the BAU scenario, regional GHG emissions are expected to be 37 MMT CO<sub>2</sub>e, which is lower than the originally anticipated 2020 BAU emissions level that was predicted in 2008 (43 MMT CO<sub>2</sub>e).

#### On-Site GHG Inventory

The Proposed Project site is currently vacant; in this 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.

#### **3.1.3.2 Analysis of Project Effects and Determination as to Significance**

##### Guidelines for the Determination of Significance and Guideline Source

The assessment of climate change impacts is by its nature a cumulative impact, as no individual project has the ability to affect the climate on a global scale. Based on Appendix G.VII of the State CEQA Guidelines, a project would have a significant environmental impact if it would:

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

The County General Plan, adopted in 2011, required that a CAP be adopted by the County and thereafter GHG guidelines. As a result of the Sierra Club lawsuit in 2013, however, the County's CAP was set aside and the development of a new CAP is currently being processed by the County under the supervision of the court.

The County General Plan does not contain policies prohibiting the County from adopting a non-CAP-based threshold prior to adoption of a court-approved CAP. Furthermore CARB in its release draft of its Proposed Scoping Plan Update for 2030, states that local governments can

consider discretionary approvals and entitlements for individual projects through the CEQA process absent an adequate CAP by implementing all feasible measures to reduce GHG emissions (see page 136 of CARB’s Draft Scoping Plan Update for 2030).

At this time, the County has not adopted GHG guidelines for general use as part of its environmental review process via an ordinance, resolution, rule or regulation developed through public review process (see CEQA Guidelines section 15064.7[b]). Accordingly, the determination of significance is governed by CEQA Guidelines 15064.4, entitled “Determining the Significance of Impacts from Greenhouse Gas Emissions.” CEQA Guidelines 15064.4(a) states:

[t]he determination of the significance of greenhouse gas emissions calls for a *careful judgment by the lead agency consistent with the provisions in section 15064*. A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, *in the context of a particular project*, whether to ... [use a quantitative model or qualitative model]” (emphasis added). In turn, CEQA Guidelines 15064.4(b) clarifies that “[a]n iron clad definition of significant effect is not always possible because the significance of an activity may vary with the setting.

Under the CEQA Guidelines, a lead agency can consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence (14 CCR 15064.4[a] and 15064.7[c]). The OPR Technical Advisory titled CEQA and Climate Change: *Addressing Climate Change through California Environmental Quality Act (CEQA) Review* states that “public agencies are encouraged but not required to adopt thresholds of significance for environmental impacts. Even in the absence of clearly defined thresholds for GHG emissions, the law requires that such emissions from CEQA projects must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact” (OPR 2008:4). Furthermore, the advisory document indicates that “in the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a ‘significant impact,’ individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice. “A lead agency should make a good-faith effort, based on the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project” (14 CCR 15064.4).

#### Climate Change Analysis Criteria

A number of agencies throughout the state, including multiple air districts, have drafted and/or adopted varying approaches and guidelines for analyzing GHG emissions and climate change in CEQA documents. None of these are binding; they are only recommendations for consideration by CEQA lead agencies. The recent California Supreme Court decision in the *Center for Biological Diversity et al. vs. California Department of Fish and Wildlife, The Newhall Land and Farming Company* (November 30, 2015, Case No. S217763; “Newhall Ranch decision”)

suggested that several approaches for determining significance of GHG emissions are appropriate, but did not preclude other methodologies that may be used by lead agencies. Some of these approaches are discussed below in the context of its applicability to the Proposed Project.

#### *Performance-Based Reduction – BAU Approach*

Performance-based approaches are based on a percentage reduction from a projected future condition. For example, reducing future BAU emissions by the AB 32 target of 29 percent (below 2020 BAU levels) through a combination of state measures, project design features (PDFs; e.g., renewable energy), or mitigation, is a performance-based approach. The performance-based approach is based on the project's reduction in emissions from an unmitigated condition. Based upon the Newhall Ranch decision, relating a given project to the achievement of state reduction targets would likely require adjustments to CARB's statewide BAU model not only to isolate new development emissions but also to consider unique geographic conditions that would be required to use the BAU performance-based methodology for a specific project. To date, this type of adjustment to the statewide BAU target has not been formulated and therefore is not appropriate for the Project's analysis.

#### *Compliance with a Qualified GHG Reduction Plan*

Under this approach, a qualified plan may be used in the cumulative impact analysis for subsequent projects when the analysis "identifies those requirements specified in the plan that apply to the project." For a GHG reduction plan to be considered a qualified plan, it must meet certain criteria established under State CEQA Guidelines Sections 15183.5(b) and 15064.4, also specified above. Consequently, if a project is consistent with a local CAP that was created to meet AB 32's GHG targets, then the project would be considered consistent with statewide GHG reduction goals for 2020. As discussed above, the San Diego County Superior Court set aside the approval of the County CAP, and the County has not completed a new CAP that would set forth GHG reduction targets and reduction measures. Therefore, pending approval of the County's CAP, this approach was determined not to be appropriate for the Project's analysis.

#### *Numerical Bright-Line*

The screening level published by the California Air Pollution Control Officers Association (CAPCOA) was used to determine the need for additional analysis and mitigation for GHG-related impacts under CEQA. The CAPCOA white paper, *CEQA and Climate Change*, recommends a 900 MT CO<sub>2</sub>e/year screening level to determine the size of projects that would be likely to have a less than considerable contribution to the cumulative impact of climate change. Projects exceeding this would require further analysis and mitigation, as necessary (CAPCOA 2008). As the Proposed Project's emissions would exceed this screening level, further analysis is required.

#### *Efficiency Metric (Per Service Population)*

Another type of quantitative analysis approach is an efficiency-based metric. Efficiency-metrics represent the GHG efficiency needed for development to achieve California's GHG emissions target established under AB 32. The intent of AB 32 is to accommodate a population and

economic growth in California, but in a way that achieves a lower rate of GHG emissions statewide. Typical efficiency metrics are based on the land use sector (residential and commercial uses) and only account for land use-related emissions and residential population and employment. While the Newhall Ranch decision did not specifically recommend the efficiency-based approach, the ruling did note that numerical efficiency metric approaches may be appropriate for determining significance of GHG emissions under particular circumstances.

The efficiency metric assesses the GHG efficiency of a project on a “service population (SP)” basis (“efficiency metric” equals project emissions divided by the sum of the number of jobs and the number of residents provided by a project). The metric represents the rate of emissions needed to achieve a fair share of the state’s emissions mandate embodied in AB 32. One method for determining a fair share contribution quantitatively is to determine if a project’s per service person (i.e., residents and employees of the project) GHG efficiency level is more or less than the GHG efficiency level that would be needed for a jurisdiction to achieve the goals mandated by AB 32 and SB 32.

### Analysis

Based on this analysis, which included an examination of the limitations of each of these alternate approaches, it was determined that the efficiency metric is the most responsive to this Project given that these are the best emissions data available at this time. Furthermore, the efficiency metric approach is one of the methods for analyzing GHG emissions discussed in the *Center for Biological Diversity et al. vs. California Department of Fish and Wildlife* (2015) 224 Cal.App.4th 1105 (Newhall Ranch case). Specifically, the Supreme Court noted that numeric approaches may be appropriate for determining significance of GHG emissions, and emphasized the consideration of GHG efficiency (62 Cal.4th at 220, 230). Therefore, the validity of using the efficiency metric approach is supported by the Supreme Court ruling in the Newhall Ranch case.

Efficiency metric analysis has also been recommended for land use sector projects by agencies such as the Bay Area Air Quality Management District (AQMD), the San Luis Obispo County Air Pollution Control District (APCD), and the South Coast AQMD. These agencies widely use this methodology, but consistent with the County, have not officially adopted it.

AEP’s White Paper also specifically suggested the efficiency metric as one possible methodology for analyzing a project’s GHG impacts post-Newhall Ranch: “Efficiency thresholds have been developed for land use sector projects based on AB 32 targets and are in common use by certain lead agencies” (Table 1: CEQA Project Significance Threshold Concepts in Light of the Newhall Ranch Ruling and Post-2020 Concerns, Page 8).

Three sources of GHG inventories were evaluated as the basis of developing an efficiency metric to use for the Project analysis. The first two sources are based on localized data for San Diego County and the third consists of data adjusted from the CARB’s 2008 Scoping Plan. The comparison of GHG inventory sources provides evidence about the relationship between Project emissions and assumptions made in the state’s Scoping Plan to achieve statewide GHG reduction targets within AB 32 and SB 32.

As part of the San Diego County General Plan Update EIR in 2011 (County 2011a), a Greenhouse Gas Inventory was prepared by the County (County 2009). The GHG inventory report primarily used the (then current) 2008 University of San Diego's Energy Policy Initiatives Center (EPIC) GHG inventory for San Diego County as the source for the GHG emission estimates for 1990 and 2006, with emission projections to 2020 (Anders et al. 2008). Not all of the 14 categories in the EPIC study were included in the County's community inventory. Those that were not typically included in community inventories or were considered of limited relevance to the unincorporated area were not used. The land use sectors that were used included electricity (including water usage), natural gas, on-road transportation, off-road vehicles and equipment, waste, other fuels, wildfire, and livestock (County 2009d). The GHG emissions inventories from County government facilities and operations emissions were calculated using the Clean Air & Climate Protection model and separated from the community inventory. The County followed a basic approach for the community-wide emissions using a per capita method to calculate the portion of the County inventory allocated to the unincorporated County using SANDAG population estimates for a given analysis year. The 2009 GHG Inventory Report concluded that total community-wide emissions in the unincorporated County of San Diego in 1990 comprised approximately 5,139,821 MT of CO<sub>2</sub>e (not including County government facility-related emissions). Thus, the total community-wide 2020 GHG emission target for the County in 2020 pursuant to EO S-3-05 would be 5,139,821 MT CO<sub>2</sub>e/year. According to SANDAG, the unincorporated County of San Diego is estimated to have a total 2020 population of 545,451 with approximately 114,338 jobs. Thus, the 2020 service population for the County would be 659,789 (SANDAG 2016). In order to achieve the County emission level of 5,139,821 MT of CO<sub>2</sub>e, in accordance with the County's General Plan, the efficiency target in 2020 would be approximately 7.8 MT CO<sub>2</sub>e/SP/year.

To provide a more accurate estimate of community-wide GHG emissions than what was reported in the General Plan Update EIR, the County updated its existing community-wide inventories for the 2012 Draft CAP using the methodologies described in the CARB Local Government Operations Protocol (LGOP) (CARB 2010). Because the substantial data required for this protocol were not available for 1990 emissions, the County followed the CARB-recommended practice of reducing (then current) baseline emissions (2006 for government operations, 2005 for community-wide) by 15 percent to estimate 1990 emissions. The land use sectors included in the 2012 CAP included transportation, residential energy, commercial/industrial energy, agriculture, solid waste, wastewater, potable water, and other (construction, light commercial, industrial, lawn and gardening, and off-road vehicles) emissions. The 2012 CAP concluded that total emissions in the County of San Diego in 2005 (not including County government facility-related operations) comprised approximately 4,512,580 MT of CO<sub>2</sub>e (County 2012a). Accordingly, a 15 percent reduction from the baseline year GHG emissions in the County of San Diego would have totaled approximately 3,835,693 MT CO<sub>2</sub>e/year. Thus, the total 2020 GHG emission target for the County pursuant to EO S-3-05 would be 3,835,693 MT CO<sub>2</sub>e/year. Applying SANDAG's County 2020 service population of 659,789, the efficiency target in 2020 in accordance with the County's 2012 Draft CAP would be approximately 5.8 MT CO<sub>2</sub>e/year.

To develop the efficiency metric for 2020 based on CARB's Scoping Plan, non-land use-related sectors in CARB's 1990 GHG inventory were removed to adjust the inventory to account specifically for land use projects. This process segregates out those emission sources that would not be applicable to land use projects. The land-use-driven sector inventory for 1990 was divided

by the service population projections for California in 2020 (total of 59,130,546 service population). Based on these data, the 2020 efficiency metric used to determine impact significance is 4.9 MT CO<sub>2</sub>e/SP/year.

Of the three GHG inventory sources, the 2020 efficiency metric derived from the adjusted CARB inventory data provides the most conservative limit for project-related GHG emissions, and is thus used in this analysis.

The Project is anticipated to be fully built out and operational in the year 2021. The post-2020 emissions target is based on SB 32, which mandates a statewide GHG emissions target of 40 percent below 1990 levels by 2030. CARB has indicated that an average statewide GHG reduction of 5.2 percent per year from 1990 emission levels is necessary to achieve the 2030 emissions reduction goal identified in SB 32 (CARB 2015a). Therefore, applying a 5.2 percent reduction to each year after 2020, the project would need to achieve an efficiency metric of 4.6 MT CO<sub>2</sub>e/SP/year for the year 2021 to be consistent with the 2030 emissions reduction goal of SB 32.

## Greenhouse Gas Emissions Generation

### *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 previous 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 Project GHG Emissions*

Emission estimates were calculated for the three GHGs of primary concern (CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O) that would be emitted from Project construction and from the Project's sources of operational emissions including on-road vehicular traffic, electricity generation, natural gas consumption,

water usage, area sources, and solid waste disposal. Emissions calculations conservatively assumed that the 111-acre Proposed Project would include the construction of 453 residential dwelling units, park and recreational uses, and an on-site wastewater treatment and water reclamation facility (WTWRF). The first construction phase focuses on overall site grading, the second phase includes infrastructure installation (utility pipelines and roadways), and the third phase addresses “vertical” development of the Project (residential building and WTWRF construction, asphalt paving, and architectural coating). Table 5 of the Appendix J to this EIR presents a summary of the land use designation, sizes and other metrics used for CalEEMod (SCAQMD 2013).

Project emissions discussed below are the result of Project-specific modeling. That modeling incorporates sustainability and efficiency PDFs that would reduce the Project’s operational GHG emissions, and would be included as building permit conditions and verified prior to the issuance of final certificate of occupancy. These include area source reductions, energy efficiencies, and water conservation measures, as specified in Table 1-2 of this EIR. Project emissions take into account applicable standards and regulations that the Project would need to comply with for buildout in 2021. These include effects on vehicle emissions due to Pavley I, Pavley II, LCFS, effects on energy emissions due to energy code enforcements and the Renewable Portfolios Standard (RPS) (to 33 percent), and applicable County policies.

#### *Construction Greenhouse Gas Emissions*

Construction activities emit GHGs primarily through the combustion of fuels in the engines of off-road construction equipment, 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 emits GHGs (including grading, building, and paving) 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.

This analysis assesses maximum daily emissions from individual construction activities, including site preparation, grading, backbone infrastructure, road construction, bridge construction, building construction, parking lot paving, and architectural coating. Construction would require heavy equipment during mass grading, utility installations, building construction and parking lot paving. Construction equipment estimates are based on default values in the Roadway Model and CalEEMod, as well as typical equipment used for the backbone infrastructure phase. Sections 1.2.2.8 and 1.2.2.9 of this EIR present a summary of the assumed equipment that would be involved in each stage of construction.

For the purpose of this analysis, Proposed Project construction is assumed to start in July 2018 and is anticipated to be fully built out and operational in the year 2021. The first phase would be site preparation and blasting that would last approximately three months. Backbone infrastructure and road construction would proceed next and last approximately seven months. Grading, bridge construction, and building construction would follow, with building construction being the longest phase at approximately three years. Project construction would finish with parking lot paving and architectural coating, which would occur for approximately five months.

Details of the construction schedule, including equipment hours of operation and duration, worker trips, and equipment mix are included in EIR Appendix J.

Construction emissions from the demolition, site grading and the construction of the residences and WTRF were calculated using the modeling software CalEEMod version 2013.2.2, which is developed by the SCAQMD. The emissions from the construction activities for the off-site roadway areas were calculated using the Road Construction Emissions Model Version, 7.1.2, developed by the SMAQMD.

As shown in Table 3.1.3-2, *Estimated Construction Emissions*, the Project-related construction activities are estimated to generate approximately 3,682 MT of CO<sub>2</sub>e. For construction emissions, the County guidance recommends that the emissions be amortized over 20 years and added to the annual operational GHG emissions. Amortized over 20 years, construction equipment would contribute 184 MT CO<sub>2</sub>e per year to the Project's annual operational emissions.

#### *Operational Greenhouse Gas Emissions*

Operational sources of GHG emissions include the following sources: area sources, energy use, water use, solid waste, stationary sources, and transportation. Project operation was assumed to begin in 2021. Table 3.1.3-3, *Estimated Annual GHG Emissions with Project Design Features and State and Federal Mandates*, presents the summary of the annual emissions for the Project (including emissions associated with the WTRF). The emissions also include the amortized annual construction emissions anticipated for the Project. As shown in Table 3.1.3-3, the Project's annual operational emissions, including amortized construction, would total 5,272 MT CO<sub>2</sub>e.

Area Emissions. Emissions from residential fireplaces, landscaping equipment, architectural coatings, and household consumer products are considered area sources. As described in Section 3.1.3.2, the Project requires that only natural gas hearths (non-wood burning) be installed in the proposed residential fireplaces. Estimated annual GHG emissions from area sources for the Project would be 329 MT CO<sub>2</sub>e.

Energy Emissions. Projects that increase electricity consumption also result in an indirect increase in GHG emissions. The generation of electricity through the combustion of fossil fuels typically yields CO<sub>2</sub>, and to a much smaller extent, methane and nitrous oxide.

The Proposed Project would comply with the 2016 California Title 24 Energy Code (which went into effect on January 1, 2017). The following energy efficient items are planned for the housing development: improved HVAC systems; enhanced ceiling, attic, and wall insulation; whole house fan installation; high-efficiency water heaters; energy-efficient three-coat stucco exteriors; programmable thermostat timers; roof anchors and pre-wiring to allow for the installation of PV systems; and high-efficiency window glazing. In addition, the Center House parking area would include an electric car re-charging station and the Project would also include the use of renewable energy which would provide 100 percent of Project's electricity needs. Using electricity generated from renewable sources displaces electricity demand which would ordinarily be supplied by the local utility.

With the implementation of energy-reducing PDFs and regulations, the Project would result in the indirect emission of 306 MT CO<sub>2</sub>e annually from natural gas usage.

Water Use Emissions. Water-related GHG emissions are from the conveyance of potable water and treatment of wastewater at the WTWRF. The Project includes several water conservation measures including the 2016 CALGreen mandate to reduce water consumption by 20 percent, the installation of the low flow water features, and the use of drought-tolerant landscape. Using California Energy Commission energy values for water conveyance in CalEEMod and the PDFs, the Project's annual GHG emissions related to water treatment and conveyance are estimated to be 193 MT CO<sub>2</sub>e.

Solid Waste Emissions. Solid waste generated by the Project would also contribute to GHG emissions. Treatment and disposal of solid waste produces significant amounts of methane. Through compliance with AB 341, the Project would achieve an average 75 percent diversion of waste during operations. This 75 percent reduction would result in solid waste-related emissions of 40 MT CO<sub>2</sub>e per year.

Stationary Emissions. Diesel-powered emergency generators would be used at the WTWRF for backup power during electric power failures. Generator emissions were estimated using CalEEMod based on the annual testing frequency and duration and the power output of the engines. Stationary annual GHG emissions were estimated to be 147 MT CO<sub>2</sub>e.

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 Project would generate approximately 4,500 ADT (LLG 2017). CalEEMod estimated the Project's total annual VMT to be 11.08 million miles. This total annual VMT was based on the average trip length calculated for this Project which was 7.88 miles per trip (LLG 2016). As allowed by the County, a reduction of 2.3 percent for Pavley II was applied to the CalEEMod results. CalEEMod already takes into account Pavley I and LCFS. See Appendix B of Appendix J to this EIR for emission reduction adjustments. The Project would result in annual GHG emissions for vehicle-related emission of 4,072 MT CO<sub>2</sub>e.

In summary, as shown in Table 3.1.3-3, the Project (including amortized construction emissions) would result in total GHG emissions of 5,272 MT CO<sub>2</sub>e per year.

The proposed Project's PDFs will be shown as a part of site plan review as applicable and verified prior to the issuance of final certificate of occupancy, as follows:

- The Proposed Project would comply with the 2016 California Title 24 Energy Code (which went into effect on January 1, 2017). The following energy efficient items are planned for the housing development: improved HVAC systems; enhanced ceiling, attic and wall insulation; whole house fan installation; high-efficiency water heaters; energy-efficient three coat stucco exteriors; programmable thermostat timers; roof anchors and pre-wiring to allow for the installation of PV systems; and high-efficiency window glazing.

- The Center House parking area would include an electric car re-charging station.
- Renewable energy would supply 100 percent of the Project's electricity needs through the required installation of rooftop solar PV panels (a photovoltaic solar system) on all residential units, the Center House, and WTWRF located within the Project site. As an alternative to the installation of PV panels on a particular building unit, enrollment in a renewables program similar to SDG&E's SunRate may be substituted if the program can be verified to supply 100 percent of the electricity needs from renewable sources for that building unit for the life of that unit. The Applicant must provide the County with documentation that the program meets the requirements stated herein by supplying the building unit with its electricity needs from renewable sources over the lifetime of the building. With each building permit, the estimated number of units requirement the installation of solar panels will be provided to the County to determine the overall remaining number of units needed to comply with this measure.
- The Project includes several water conservation measures, including the 2016 CALGreen mandate to reduce water consumption by 20 percent, the installation of the low flow water features, and the use of drought-tolerant landscape.
- The Proposed Project would include natural gas fireplaces only.

#### *Significance of Project Greenhouse Gas Emissions*

Based on SANDAG forecast data for the Project's census tract (census tract 203.07), on average, 2.63 residents are expected to reside in each dwelling unit and 18 jobs are anticipated to be generated per developed employment acre, for a total service population of 1,193 persons (SANDAG 2016). As shown in Table 3.1.3-4, *GHG Emissions Significance Determination*, at full buildout the Proposed Project would result in emissions of 4.4 MT/SP/year.

This is consistent with the stated 2021 efficiency metric, and therefore, the Project would result in **less than significant GHG impacts**.

#### *Conflict with Regulations adopted for Purposes of Reducing GHG Emissions*

#### *Consistency with Applicable Plans (CEQA Guidelines Section 15064.4[b][3])*

A qualitative analysis of the Project's compliance with applicable plans and policies for reduction of GHG emissions considers the Project's potential to conflict with an applicable plan—the County of San Diego's General Plan—as that planning document contains various goals, policies and objectives related to the reduction of GHG emissions and global climate change. The Project's potential to conflict with other applicable plans—SANDAG's 2050 RTP/SCS and San Diego Forward, adopted for the purpose of reducing GHG emissions at the regional level from passenger vehicles pursuant to SB 375—is identified as a factor that the lead agency should consider pursuant to CEQA Guidelines Section 15064.4(b).

The regulatory plans and policies discussed in Section 3.1.3.1 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 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 to reduce energy; fully recover landfill gas for energy; expand research and development; and so forth.

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 Project would emit 4.4 MT CO<sub>2</sub>e/SP/year in 2021, which is lower than the 4.9 MT CO<sub>2</sub>e/SP/year efficiency metric considered consistent with the AB 32's 2020 reduction target, and is also lower than the 4.6 MT CO<sub>2</sub>e/SP/year efficiency metric that is considered on the State's reduction trajectory at buildout for meeting SB 32 and EO S-3-05's reduction targets.

The Project would not impede or conflict with the substantial progress towards the reduction targets set by EO B-30-15, as described in more detail below under the *Horizon Year (2030 and 2050 Emissions Inventory)* section.

As discussed above, the Proposed Project would achieve GHG reductions through PDFs that includes improved energy efficiency. Verification and commissioning of these features would occur through independent third-party inspection and diagnostics. As a condition of building permit approval, however, the Proposed Project is required to comply with 2016 Title 24 standards (which surpass the 2013 Title 24 Energy Efficiency Standards by 28 percent), reduce indoor water consumption by up to 20 percent, and have 100 percent of electricity generated by renewable sources. Verification of increased water and energy efficiencies will 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 prior to issuance of the building permit. The Project would result in emissions of 4.4 MT CO<sub>2</sub>e/SP/year, which would be consistent with statewide GHG reduction targets established by AB 32 and SB 32.

The Project also would be consistent with specific COS policies 14.3, 15.1, 15.4, 17.2, 17.6, and 19.1, in that the Project: includes many design features to reduce energy and water use; would supply 100 percent of the Project's electricity needs through renewable sources; proposes sustainability and efficiency features consistent with the California Green Building Code; proposes implementing energy efficiency features that would achieve 2016 Title 24 requirements; would divert 90 percent of inert construction materials and 70 percent of all other construction materials from landfills through reuse and recycling; would provide areas for storage and collection of recyclables and yard waste; and proposes implementing water conservation strategies to reduce water usage by installing low-flow water features. Plan conformance is additionally analyzed in Section 3.1.6, *Land Use*, of this EIR.

## Consistency with SB 375 and SANDAG's 2050 RTP/SCS

At the regional level, SANDAG's San Diego Forward was adopted for the purpose of reducing GHG emissions attributable to passenger vehicles in the San Diego region. While San Diego Forward does not regulate land use or supersede the exercise of land use authority by SANDAG's member jurisdictions (i.e., the County of San Diego and cities therein), the regional plan is a relevant regional reference document for purposes of evaluating the intersection of land use and transportation patterns, and the corresponding GHG emissions. The underlying purpose of San Diego Forward is to provide direction and guidance on future regional growth (i.e., the location of new residential and non-residential land uses) and transportation patterns throughout San Diego County as stipulated under SB 375. Although the Proposed Project would increase the density of residential land uses on the Project site, it would also include a number of PDFs to reduce GHG emissions that support the goals of San Diego Forward. For example, the Project includes a photovoltaic solar system, an electric vehicle charging station, low flow water fixtures, and drought tolerant landscaping.

The County's adopted General Plan emphasizes sustainable community design principles within its Goals and Policies. By locating the Proposed Project near existing and planned infrastructure, services, and jobs in a compact pattern of development, while at the same time promoting sustainability among its residents, the Project has been designed around the guiding principles of the General Plan. Developing the Proposed Project in this manner meets a number of the objectives of San Diego Forward, AB 32, and SB 375.

While the Project site was not identified for development in SANDAG's San Diego Forward 2020 and 2035 forecasted development pattern maps, it would be in-line with the SCS GHG benefits as the Project would support and/or provide a range of housing types, services and jobs in a compact pattern of development located within 0.5 mile (a 10-minute walk) of commercial and civic facilities, and is located near to transit stops and employment centers. This in turn, would reduce the size of required infrastructure improvements and the number and length of automobile trips. The Project would provide a variety of housing opportunities located near major employment centers consistent with the smart growth concept of locating housing closer to retail, services, and jobs on smaller lots to reduce required infrastructure and the length of automobile trips while increasing community livability and preserving open space by compact development. The Project's residential uses are within walking distance of, and are connected to, the commercial services and civic uses of its central commercial/civic core and the HGV Village Center.

### Horizon Year (2030 and 2050 Analysis)

SB 32 was recently adopted by the Legislature to codify the interim target goal of reducing GHG emissions to 40 percent below 1990 levels by 2030. The interim target was established to ensure California would effectively continue its trajectory toward meeting or exceeding the long-term emission reduction statewide goal of reducing GHG emissions to 80 percent below 1990 levels by 2050 as set forth in EO S-3-05. There has been no legislative action to adopt the 2050 GHG reduction targets. Although SB 32 was recently adopted by the Legislature, there is no currently adopted statewide GHG reduction plan or framework that extends beyond 2020. Also, no agency with subject matter expertise has adopted regulations to achieve these statewide goals at the

project-level. Meeting these post 2020 targets will require substantial effort at the state, regional, and local levels. Although a local government's land use decisions plays a role in assisting the state in meeting the long-term GHG emissions targets, ultimately AB 32 and SB 32 require that the state meet the long-term GHG emissions targets, not an individual project.

The state and CARB are working toward adopting regulatory programs and frameworks designed to support meeting statewide post-2020 reduction goals. For example, the Scoping Plan First Update includes some post-2020 concepts (reduction measures) that are currently underway. CARB is also moving forward with a second update to the Scoping Plan to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32. The 2017 Climate Change Scoping Plan Update, Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target, was released in draft form on January 20, 2017. As stated above, while there has been activity at the legislative, executive, and judicial levels, there are currently no adopted plans or measures that specifically prescribe how the post-2020 targets will be met.

CEQA Guidelines 15064.4(a) permits both quantitative and qualitative analysis. Therefore, this analysis assesses whether or not a project is overall consistent with (i.e., not interfering with) programs CARB identified in its First Update as capable of assisting the state in meeting its long-term GHG emissions targets. The data point for this qualitative analysis is the substantial evidence CARB relied upon in its First Update to the Scoping Plan to conclude that California was on track to meet the 2030 and 2050 state GHG targets and analyzes in a qualitative manner whether the Project interferes with the programs CARB identified in the First Update as providing a means for the state to achieve these long-term state targets.

CARB has expressed optimism with regard to both the 2030 and 2050 goals. It states in the First Update to the Climate Change Scoping Plan that "California is on track to meet the near-term 2020 greenhouse gas limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32" (CARB 2014a). With regard to the 2050 target for reducing GHG emissions to 80 percent below 1990 levels, the First Update to the Climate Change Scoping Plan states:

*This level of reduction is achievable in California. In fact, if California realizes the expected benefits of existing policy goals (such as 12,000 megawatts [MW] of renewable distributed generation by 2020, net zero energy homes after 2020, existing building retrofits under AB 758, and others) it could reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80 percent below 1990 levels by 2050. Additional measures, including locally driven measures and those necessary to meet federal air quality standards in 2032, could lead to even greater emission reductions.*

In other words, the experts at CARB attest the state is on a trajectory to meet the 2020, 2030, and 2050 GHG reduction targets set forth in AB 32, SB 32 and EO S-3-05.

The Scoping Plan First Update discusses a number of strategies currently underway that have led to significant emission reductions. It also provides a summary of recommended actions the state could take to meet long-term reduction goals. The draft 2017 Climate Change Scoping Plan

Update includes a detailed roadmap by accelerating the focus on continued investment in renewables, greater use of low carbon fuels including electricity and hydrogen, stronger efforts to reduce emissions of short-lived climate pollutants (methane, black carbon, and fluorinated gases), and further efforts to create walkable communities with expanded mass transit and other alternatives to traveling by car. 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. Continuing the cap-and-trade program and ensuring that natural lands become carbon sinks provide additional emissions reductions and flexibility in meeting the target (CARB 2014a).

This discussion evaluates whether the Project's post-buildout GHG emissions trajectory would impede the attainment of the 2030 and 2050 GHG reduction goals identified in SB 32 and S-3-05. As noted above, in qualitatively evaluating the Project's emissions for consistency with SB 32 and EO B-30-15, it is important to note that some of these broad-scale shifts in how energy is produced and used are outside of the control of the Project. The changes necessitated by the State of California's long-term climate policy will require additional policy and regulatory changes, which are unknown at this time. As a consequence, the extent to which the Project's emissions and resulting impacts would be mitigated through implementation of such changes is not known. Furthermore, implementation of such additional policy and regulatory changes is in the jurisdiction of state-level agencies (e.g., CARB), not the County or the Project. Nonetheless, this analysis renders a determination as to whether the Proposed Project would conflict with or impede substantial progress towards the statewide reduction goals established by SB 32 for 2030 and by EO S-3-05 for 2050.

The following discussion evaluates whether the Proposed Project would interfere with the four main programs CARB identified to support its conclusions that the state is on a trajectory to meet the 2030 and 2050 GHG targets: (1) initiative to install 12,000 MW of renewable distributed energy by 2020; (2) CBC mandate to construct net zero energy homes after 2020; (3) existing building retrofits under AB 758; and (4) California's Cap-and-Trade Regulation.

#### *State's Goal to Install 12,000 MW of Renewable Distributed Generation Systems by 2020.*

The Project would not interfere with the state's goal to install 12,000 MW of renewable distributed generation systems by 2020. The Project includes a PDF to supply 100 percent of the Project's electricity needs through renewable sources. Therefore, the Project would not interfere or conflict with the state's goal of 12,000 MW of renewable distributed generation by 2020.

#### *Non-interference with Construction of Net-Zero Energy Homes after 2020*

The Project would not interfere with the ability of the California Building Commission to mandate constructing net-zero energy homes after 2020. The Proposed Project is anticipated to start construction in 2018 with full buildout expected in 2021. The Project would be required to construct homes in conformance with the current California Building Commission mandates because the County does not issue occupancy permits for projects that do not comply with the CBC in effect at that time.

### *Non-interference with AB 758's Existing Buildings Energy Efficiency Action Plan*

The Project would not interfere with the state's implementation of building retrofits to further energy efficiency for existing buildings under AB 758 or SB 350. The CEC is tasked with developing and implementing a comprehensive program to increase energy efficiency in existing residential and nonresidential buildings that "fall significantly below the current standards in Title 24" (Pub. Resources Code, section 25943[a][1]). The Project would be constructed in compliance with the applicable Title 24 standards and therefore would not interfere with CEC or other initiatives implemented to increase energy efficiency and reduce GHG emissions associated with buildings that do not adhere to Title 24 standards.

### *Other State Programs – Cap-and-Trade*

Cap-and-trade was initially identified in the 2008 Scoping Plan, and carried forward in the draft 2017 Climate Change Scoping Plan Update, as a strategy for helping California reduce its GHG emissions (CARB 2008b). A cap-and-trade program sets the total amount of GHG emissions allowable for facilities under the cap and allows covered sources, including producers and consumers of energy, to determine the least expensive strategies to comply. AB 32 required CARB to adopt the Cap-and-Trade Regulation by January 1, 2011, and the program itself began in November 2012. The Cap-and-Trade Regulation is being implemented in two stages. Electric generating utilities, electricity importers, and large industrial facilities became subject to the program beginning in 2013, and fuel distributors were brought under the cap in 2015. The Project would not interfere with the state's implementation of this GHG reducing program because it is not an electric generating utility, electricity importer, large industrial facility, or fuel distributor. Rather, the Project, like all consumers of energy and fuel from the sources regulated by cap-and-trade will have the related GHG emissions reduced from these resources as the generators must invest heavily in GHG reducing technologies in order to comply with the ever decreasing cap. In this sense, similar to all consumers paying for the use of fuel and electricity resources, the Project and its residents would contribute financially toward these GHG reducing technologies.

Based on the foregoing, the Project would neither conflict nor interfere with the state's implementation of SB 32's target of reducing statewide GHG emissions to 40 percent below 1990 levels by 2030, or EO S-3-05's target of reducing statewide GHG emission to 80 percent below 1990 levels by 2050. This is because it would not interfere with the state's implementation of GHG emission reduction measures described in CARB's First Update to the Scoping Plan; including the state providing for 12,000 MW of renewable distributed generation by 2020, CARB's draft 2017 Climate Change Scoping Plan Update, the California Building Commission mandating new zero energy homes in the building code after 2020, existing building retrofits under AB 758, and Cap-and-Trade Regulation. CARB identified these programs to reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80 percent below 1990 levels by 2050.

### 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 PDFs identified above, impacts associated with GHG emissions would be less than significant.**

### **3.1.3.3 Cumulative Impact Analysis**

As described in Section 3.1.3.1 of this discussion, global climate change is a cumulative issue by definition, and its analysis constitutes cumulative review. As a result, additional discussion is not required.

### **3.1.3.4 Significance of Impacts**

Based on the analysis provided above, the Proposed Project would have less than significant impacts related to GHG emissions. As a result, no mitigation measures are required.

### **3.1.3.5 Conclusion**

Based on the Project design features and analysis provided above, the Proposed Project would have less than significant impacts related to GHG emissions.

<b>Table 3.1.3-1 GLOBAL WARMING POTENTIALS AND ATMOSPHERIC LIFETIMES OF COMMON GHGs</b>		
<b>Greenhouse Gas</b>	<b>Atmospheric Lifetime (Years)</b>	<b>100-year GWP<sup>1</sup></b>
Carbon Dioxide (CO <sub>2</sub> )	50-200	1
Methane (CH <sub>4</sub> )	12	25
Nitrous oxide (N <sub>2</sub> O)	114	298
HFC-134a <sup>2</sup>	14	1,430
PFC <sup>3</sup> : Tetrafluoromethane (CF <sub>4</sub> )	50,000	7,390
PFC: Hexafluoroethane (C <sub>2</sub> F <sub>6</sub> )	10,000	12,200
Sulfur Hexafluoride (SF <sub>6</sub> )	3,200	22,800

Source: IPCC 2007

<sup>1</sup> GWPs are calculated over 100-year time horizon.

HFC = hydrofluorocarbon

PFC = perfluorocarbon

<b>Table 3.1.3-2 ESTIMATED CONSTRUCTION EMISSIONS</b>	
<b>Source</b>	<b>Emissions (MT CO<sub>2</sub>e)</b>
Site Preparation and Blasting	213
Backbone Infrastructure	242
Road Construction	407
Grading	186
Bridge Construction	874
Building Construction	1,613
Parking Lot Paving	113
Architectural Coating	34
<b>TOTAL</b>	<b>3,682</b>
Amortized Construction Emissions <sup>1</sup>	184

Model output data is provided in Appendix A of Appendix J to this EIR.

<sup>1</sup> Construction emissions are amortized over 20 years in accordance with County guidance.

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

<b>Table 3.1.3-3 ESTIMATED ANNUAL GHG EMISSIONS WITH PROJECT DESIGN FEATURES AND STATE AND FEDERAL MANDATES</b>	
<b>Source</b>	<b>Emissions (MT CO<sub>2</sub>e)</b>
Area	329
Energy	306
Mobile	4,072
Waste	40
Water (including wastewater treatment)	193
WTWRF Generators	147
<b>Operational Subtotal</b>	<b>5,088</b>
Amortized Construction (Table 3.1.3-2)	<b>184</b>
<b>TOTAL PROJECT</b>	<b>5,272</b>

Source: CalEEMod (output data is provided in Appendix A of Appendix J to this EIR).

<b>Table 3.1.3-4 GHG EMISSIONS SIGNIFICANCE DETERMINATION</b>	
<b>Category</b>	<b>Value</b>
Total Project Emissions (MT CO <sub>2</sub> e)	5,272
Project Service Population (residents)	1,193
Project Emissions per Service Population (MT CO <sub>2</sub> e/SP/year)	<b>4.4</b>
2021 Efficiency Metric (MT CO <sub>2</sub> e/SP/year)	4.6
<b>Significant Impact?</b>	<b>No</b>

Source: CalEEMod (output data is provided in Appendix A of Appendix J to this EIR)