2.7 Greenhouse Gas Emissions

HELIX prepared the Greenhouse Gas Analyses Report (HELIX 2017d, updated 2018) 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 and was updated to reflect the recent judicial decision related to the County of San Diego's (County) guidance for the assessment of GHG emissions under CEQA, with the complete report included as Appendix J of this EIR and as updated by the Supplemental Letter (Supplement) included in Appendix J.

2.7.1 Existing Conditions

2.7.1.1 *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 18th 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_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs, such as HFC-23), fluorocarbons or perfluorocarbons (PFCs, such as CF_4), and sulfur hexafluoride (SF_6). 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_2 has been designated the reference gas for comparing GWPs. Thus, the 100-year GWP of CO_2 is equal to one (see Table 2.7-1, *Global Warming Potentials and Atmospheric Lifetimes of Common GHGs*).

Based on the current emphasis in state planning on GHG emissions, a number of exchanges have been formed to specifically deal with off-set purchases for Projects being constructed in California. This topic is additionally discussed below.

2.7.1.2 *Types of GHGs*

California Health and Safety Code Section 38505(g) defines GHGs to include the following compounds: CO_2, CH_4, N_2O, chlorofluorocarbons (CFCs), HFCs, and SF_6. 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_2 include the burning of fuels such as coal, oil, natural gas and wood. As of December 2014, global concentrations of CO_2 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_2 equivalent (CO_2e) 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_4) is a gas and is the main component of natural gas used in homes. It has a GWP of about 21, or 21 times the GWP of CO_2. A natural source of CH_4 is from the decay of organic matter. Geological deposits known as natural gas fields contain CH_4, which is extracted for fuel. Other sources are from decay of organic material in landfills, fermentation of manure, and cattle digestion.

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

Fluorocarbons are gases formed synthetically by replacing all hydrogen atoms in CH_4 or ethane with chlorine and/or fluorine atoms. 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_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It has the highest GWP of any gas (23,900). SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Ozone is a GHG 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_X and VOCs) to global warming (CARB 2006).

A summary of the most common naturally occurring and artificial GHGs is provided in Table 2.7-1. Of the gases listed in Table 2.7-1, CO_2, CH_4 and N_2O, are produced by both natural and anthropogenic (human) sources. The remaining gases, HFCs, chlorofluorides (CFs), and SF_6, are the result of solely human processes.

2.7.1.3 *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_2 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_2, CH_4, N_2O, HFC, PFC and SF_6) 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. 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.

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

AB 1493 (Pavley) requires that CARB develop and adopt regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty truck and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State." On September 24, 2009, CARB adopted amendments to the Pavley regulations that intend to reduce GHG emissions in new passenger vehicles from 2009 through 2016. The amendments bound California's enforcement of AB 1493 (starting in 2009), while providing vehicle manufacturers with new compliance flexibility. The amendments also prepare California to merge its rules with the federal CAFE rules for passenger vehicles. In January 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single group of standards called Advanced Clean Cars.

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 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, 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_2e. The Scoping Plan's current estimate of the necessary GHG emission reductions is 78 MMT CO_2e (CARB 2014b). This represents an approximately 15.32 percent reduction. CARB is forecasting that this would be achieved through the following reductions by sector: 25 MMT CO_2e for energy; 23 MMT CO_2e for transportation; 5 MMT CO_2e for high-GWP GHGs, and 2 MMT CO_2e for waste. The remaining 23 MMT CO_2e 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 EO 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 in January 2017, a draft proposed Final was released in November 2017 and the final version was adopted in December 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 a CAP in 2012 to address the issue of climate change as it relate 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 that County CAP.

The County has been in the process of updating the CAP to the satisfaction of the County Superior Court. A Draft CAP and EIR were published for public review in August 2017. The County addressed all comments received and presented a final CAP to the County Planning Commission in January 2018, followed by approval by ~~which will be presented to~~ the County Board of Supervisors ~~for approval~~ in February 2018, approximately one week before amended Appendix J was recirculated. The current GHG analysis does not tier from the CAP; however, it is consistent with and does not conflict with the CAP because the Project would achieve no net increase in GHG emissions (i.e., carbon neutrality) over existing baseline conditions (which are assumed to be zero) with the implementation of the Project's recommended design features and mitigation measures.

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. In December 2015, CARB, by resolution, accepted SANDAG's GHG emissions quantification analysis and determination that, if implemented, the SCS would achieve CARB's 2020 and 2035 GHG emissions reduction targets for the region.

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.

2.7.1.4 *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_2e concentration is required to keep global mean warming below 3.6ºF, 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_2e 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_2e 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_2e.

Statewide GHG source emissions totaled 433 MMT CO_2e in 1990, 469 MMT CO_2e in 2000, 456 MMT CO_2e in 2010, and 459 MMT CO_2e 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_2e in 2010. The largest contributor of GHG in San Diego County was the on-road transportation category, which comprised 43 percent (14 MMT CO_2e) of the total amount. The second highest contributor was the electricity category, which contributed 8 MMT CO_2e, 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_2e, which is lower than the originally anticipated 2020 BAU emissions level that was predicted in 2008 (43 MMT CO_2e).

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. For purposes of establishing the existing environmental conditions on the Project site, GHG emissions on the Project site are conservatively assumed to be zero.

2.7.2 Analysis of Project Effects and Determination as to Significance

2.7.2.1 *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. 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~~was processed by the County under the supervision of the court, as described above.

In addition, Section 15064.4(b)(1)(3) states that:

> *…a lead agency should consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment: (1) the extent to which a project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting; (2) whether project emissions exceed a threshold of significance that the lead agency determines applies to the project; and, (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.*

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).

As of the time of preparation of this analysis, the County has not adopted GHG guidelines for general use as part of its environmental review process. This analysis is consistent with CEQA Guidelines 15064.4, and appropriately relies upon a threshold based on the exercise of careful judgement and believed to be appropriate in the context of this particular Project: net zero GHG emissions. CEQA provides that the determination of whether or not a project has a significant effect on the environment is based on the thresholds described in the environmental document. These thresholds of significance can be adopted by the local agency or can be based upon those standards set forth in Appendix G of the CEQA Guidelines (14 Cal Code Regs ["CEQA Guidelines"] Section 15064). 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." Therefore, consistent with CEQA Guidelines 15064.4, the GHG analysis for the Project appropriately relies upon a threshold based on the exercise of careful judgement and believed to be appropriate in the context of this particular project: net zero GHG emissions.

When discussing project-level GHG emissions reduction actions and thresholds, the 2017 Climate Change Scoping Plan Update states:

> *achieving no net increase in GHG emissions is the correct overall objective, but it may not be appropriate or feasible for every development project. An inability to mitigate a project's GHG emissions to zero does not necessarily imply a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA (page 135).*

While the Scoping Plan makes it clear that a lead agency is not required to set net zero as the GHG threshold, when such a stringent threshold is selected, a project cannot have a cumulatively considerable impact because it would yield no net incremental increase in the level of existing GHG emissions in the existing environment.

2.7.2.2 *Analysis*

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_2, CH_4, and N_2O) 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 this section and 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 though 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 was conservatively assumed to start in July 2018 and is anticipated to be fully built out and operational in the year 2021 (this is conservative because the earlier the date, the less stringent the regulatory standards and controls on emissions). In any event, the Project will have net zero emissions.

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 WTWRF 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.

Development under the Proposed Project would also result in changes in CO_2 sequestration from the atmosphere. By removing existing vegetation, the Project would result in a one-time carbon exchange. Emissions from this land use change have been estimated according to the IPCC protocol for vegetation. It should be noted that the loss of sequestered carbon estimate is conservative as the Proposed Project would also plant new landscape trees which would sequester additional carbon through each growth cycle, resulting in increasing amounts of sequestered carbon each year for the life of the tree. Furthermore, as required in Section 2.3 of the EIR, impacts to "forest land" (scrub habitats) and "cropland" (grasslands) would be fully mitigated through on- or off-site preservation and/or purchase of credits as an approved mitigation bank, thus providing long-term conservation value. To provide a conservative analysis, the reduction of carbon emissions attributable to the Proposed Project through landscaping and the additional off-site vegetated lands has not been factored in to the analyzed emissions totals.

As shown in Table 2.7-2, *Estimated Construction Emissions*, the Project-related construction activities, including the one-time loss of sequestered carbon, are estimated to generate approximately 4,411 MT of CO_2e.

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 2.7-3, *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 WTWRF). As shown in Table 2.7-3, the Project's annual operational emissions would total 5,222 MT CO_2e.

Area Emissions. Emissions from residential fireplaces, landscaping equipment, architectural coatings, and household consumer products are considered area sources. As described under "GHG Design Features," below, 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_2e.

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_2, 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; and high-efficiency window glazing. Roof anchors and pre-wiring to allow for the installation of PV systems would be provided on additional non-reisdential structures. Using electricity generated from renewable sources displaces electricity demand which would ordinarily be supplied by the local utility.

An electric vehicle charging station and use of renewable energy are both incorporated into the Project as well, as described in the discussion of PDFs below.

As a third-party check of Project analyses, ConSol, a building energy efficiency consultant, was retained to calculate the residential energy demand for the Project. ConSol modeled the energy demand of prototype residences with CEC's public-domain compliance software, known as California Building Energy Code Compliance – Residential. The objective of the ConSol report was to calculate the annual energy use with options that achieve: (1) compliance with the 2016 Title 24 Standards (California's Energy Code), and (2) Zero Net Energy (ZNE) standards as defined in the California Energy Commission's (CEC's) 2015 Integrated Energy Policy Report The off-set of 100 percent of the electrical usage provided in the Global Climate Change Study was determined to be achievable through a combination of energy efficiency enhancements to the building envelope and regulated loads, and the provision of on-site solar.[1]

With the implementation of energy-reducing PDFs and regulations, the Project would result in the indirect emission of 306 MT CO_2e 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_2e.

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_2e per year.

[1] Additionally, according to ConSol's report, the Project could also off-set all the natural gas energy use with an increased solar system. The ConSol analysis calculates the estimated size of a rooftop solar PV system that would produce the amount of electricity required for each building to achieve 100 percent offsets of all fuel uses, based on Time Dependent Valuation (TDV) values (i.e., the time of day when most expensive, or peak use), thus achieving ZNE. For purposes of providing a conservative analysis, ZNE credit for the reduction of natural gas emissions was not taken in this analysis.

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_2e.

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 11.5 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 2017; see the Average Trip Length Analysis in Appendix C to EIR Appendix J). 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 the update to Appendix B of Appendix J to this EIR in the Supplement for emission reduction adjustments. The Project would result in annual GHG emissions for vehicle-related emission of 4,207 MT CO_2e.

In summary, as shown in Table 2.7-3, the Project would result in total operational GHG emissions of 5,222 MT CO_2e per year.

GHG Project Design Features

The following Project's PDFs are discussed in the Project's Specific Plan, listed on Table 1-2 and in Chapter 7.0 of this EIR, and required as conditions of approval from the County of San Diego. Project construction PDFs include:

- Construction equipment shall be operated in accordance with CARB's Airborne Toxic Control Measure (ATCM) that limits diesel-fueled commercial motor vehicle idling. In accordance with the subject ATCM (see Cal. Code Regs., tit. 13, §2485), the drivers of diesel-fueled commercial motor vehicles meeting certain specifications shall not idle the vehicle's primary diesel engine for longer than five minutes at any location. The ATCM requires the owners and motor carriers that own or dispatch such vehicles to ensure compliance with the ATCM requirements.

- Tier III or higher construction equipment will be used, with the exception of concrete/industrial saws, generator sets, welders, air compressors, or construction equipment where Tier III or higher is not available.

- To the extent ~~practicable and~~ feasible, diesel equipment fleets that exceed existing emissions standards will be utilized when commercially available in the San Diego region.

- To the extent ~~practicable and~~ feasible, electric and renewable fuel powered construction equipment will be utilized when commercially available in the San Diego region.

- To the extent ~~practicable and~~ feasible, electricity will be used to power appropriate types and categories of construction equipment (e.g., hand tools).

- As a PDF, the Applicant will develop and provide to all homeowners an informative brochure to educate homeowners regarding water conservation measures, recycling, location of the electric vehicle charging stations, location of outdoor electric outlets to promote using electrical lawn and garden equipment, and location of nearby resources such as dining and entertainment venues, small commercial centers, and civic uses to reduce vehicle miles traveled.

- The Project will comply with County Municipal Code Section 68.508-68.518. A Construction and Demolition Debris Management Plan and a refundable performance guarantee will be developed by the Construction Contractor prior to building permit issuance, and implemented to divert debris from construction and demolition away from landfills. The plan will require that 90 percent of inerts and 70 percent of all other materials from the Project are recycled.

Project operational PDFs are as follows:

- The Proposed Project will comply with the 2016 California Title 24 Energy Code (which went into effect on January 1, 2017). The following energy efficient items will be included in all residential units: improved HVAC systems with sealed (tight) air ducts; enhanced ceiling, attic and wall insulation; install energy conserving appliances such as whole house fans; high-efficiency water heaters (tankless water heaters); energy-efficient three coat stucco exteriors; energy efficient appliances; programmable thermostat timers; and high-efficiency window glazing.

- Roof anchors and pre-wiring to allow for the installation of PV systems where such systems are not installed as part of Project implementation will be provided on additional non-residential structures (e.g., if an on-site WTWRF is approved as part of the Project); and high-efficiency window glazing.

- The Center House parking area will include a dual-port Level 2 EV charging station (serving two parking spaces). The Project will plumb for EV charging station for every residential unit.

- The Project's outdoor landscaping plan will use turf only in sports field, dog park and park/recreation areas; maximize drought-tolerant, native, and regionally appropriate plants through planting in conformance with the Project Conceptual Landscape Plan and the County's Water Conservation and Landscape Design Manual; and incorporate weather-based irrigation controllers, multi-programmable irrigation clocks, and high efficiency drip irrigation systems. At the time of final inspection, a manual will be placed in each building that includes, among other things, information about water conservation. The Project shall submit a Landscape Document Package that complies with the referenced County Ordinance and demonstrates a 40 percent reduction in outdoor use. The Landscape Document Package shall be submitted to the County for review and approval prior to issuance of any building permits and compliance with this measure shall be made a condition of the Project's approval.

- The Project will utilize reclaimed water from the proposed WTWRF for outdoor irrigation.

- The Project will install rooftop solar PV panels (a photovoltaic solar system) on all residential units and the Center House in order to supply 100 percent of the Project's electricity needs through renewable energy. To clarify for this Project, this means that the Project will design all residences and the Center House to achieve the CEC's ZNE standards, as defined in that agency's 2015 Integrated Energy Policy Report (CEC 2015). In other words, this will include covering electricity and natural gas needs.

- Project potable water use will be reduced by 20 percent through installation of low-flow water fixtures, reduction of wastewater generation by 20 percent, installation of low-flow bathroom fixtures, and installation of weather-based smart irrigation control systems.

- All fireplaces installed in the Project's residential development areas must be natural gas or equivalent non-wood fireplaces only.

- As a matter of regulatory compliance, the Project would comply with Section 5.106.5.2 of the 2016 California Green Building Standards Code (CALGreen Code), which requires the provision of designated parking for shared vehicles and clean air vehicles. This will occur at the Center House and Project parks.

- As discussed in the Specific Plan, the Project will provide bicycle parking facilities and bicycle circulation improvements to encourage the use of bicycles (see also *Improvement Plans*).

- Marked crosswalks connecting the east and west sides of Country Club Drive will be located from each of the Project entries to the future multi-use trail on the west side of the road to accommodate pedestrians/equestrians in crossing the road.

- The Project's parking facilities will be required to comply with the County's Parking Design Manual that requires parking areas to minimize the heat island effect that results from asphalt and/or large building block surfaces such as parking lots.

- The Project will provide natural gas outlets in all residential backyards and within the common areas of multi-family development areas.

- The Project will provide electrical outlets in all residential backyards and within the common areas of multi-family development areas.

- Areas for storage and collection of recyclables and yard waste will be provided.

- The Landscaping Plan for the Project will include the installation of a minimum of 2,045 trees within the Project site.

- The HOA will provide two electrical vehicles that will be sited at the Center House for use by residents for service that further connects various Project components, land uses, parks/open spaces, and the retail/commercial uses of HGV and HGV South. The vehicles will be provided to the HOA with the issuance of the first occupancy permit and the future provision and maintenance of such vehicles shall thereafter be the responsibility of the

HOA in accordance with the CC&Rs. The vehicles will be available for use based upon a self-service check in system utilizing HOA identification cards. This program will terminate when a transit linkage is proposed by the local transit district.

- An area within the developable portion of the Center House will be reserved for dedication for a transit stop for bus service when a local transit line is extended to service the HGV/HGV South Village area. The Project's proposed circulation network of sidewalks, trails, and bicycle routes, will provide connections to the transit stop to further provide a regional alternative transportation system.

- The HOA will provide informational materials on SANDAG's rideshare programs like icommute. The Applicant will develop and provide to all homeowners an informative brochure, approved by the County, that will educate homeowners regarding water conservation measures, recycling, location of the electric vehicle charging stations, location of outdoor electric outlets to promote using electrical lawn and garden equipment, and location of nearby resources such as dining and entertainment venues, commercial centers, and civic uses to reduce VMT.

Appendix B of the 2017 Scoping Plan Second Update identifies examples of on-site project design features, mitigation measures and direct regional investments that may be utilized to minimize GHG emissions from land use development projects. CARB states that Appendix B "should be viewed as a general reference document;" it "should not be interpreted as official guidance or as dictating requirements." CARB also provides the following caveat:

> *[n]ot all of the listed local measures or CEQA measures listed will be relevant to, or appropriate for, a given area or project. Nothing in the Scoping Plan or this appendix limits the discretion conferred to lead agencies in determining the appropriate level and type of mitigation, so long as their decisions are supportable by evidence in the record as required by CEQA. There is no 'one size fits all' solution and different policies will be more suitable in urban and suburban areas versus rural areas, among other considerations.*

All of the PDFs described above will be conditions of approval for the Project, as shown in Table 1-2 and Chapter 7.0 of this EIR.

Taking all of the above into account, and as shown on Table 2.7-2, the total amount of Project-estimated construction emissions is anticipated to be 4,411 MT CO_2e over the existing environmental setting. This is considered a **significant GHG impact.** (**Impact GHG-1**)

Taking all of the above into account, and as shown on Table 2.7-3, the total amount of Project-estimated annual (operational) GHG emissions is 5,222 MT CO_2e over the existing environmental setting. As such, the emissions associated with the Project would result in **significant GHG impacts**. (**Impact GHG-2**)

Conflict with Plans, Policies and 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 2.7.1.3 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. SB 32 established a mid-term target critical to help frame updates to the Scoping Plan needed to continue driving down emissions and achieve the long-term target. Through the purchase of carbon credits as described below in Section 2.7.5, the Project would attain a net zero increase in GHG emissions, which is consistent with the AB 32 2020 reduction target, and on track for meeting the SB 32 and EO S-3-05 reduction targets.

As discussed above, the Proposed Project would achieve GHG reductions through PDFs that include 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 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 3.1.5, *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, the Project site location was identified for development consistent with the 2011 General Plan in the SANDAG 2035 forecast development pattern map, and is~~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. It is also noted that SANDAG has identified the average trip length as 7.9 miles. As noted above, the average distance of Project trips was calculated by LLG to be 7.88 miles, which is consistent with 7.9 (see Attachment C to EIR Appendix J). 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.

Significance of Plan, Policy and Regulatory Compliance

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.**

2.7.3 Cumulative Impact Analysis

As described in Section 2.7.2.1 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.

2.7.4 Significance of Impacts Prior to Mitigation

Impact GHG-1 Project construction emissions would not be fully offset by PDFs identified for Project construction. This is identified as a significant impact.

Impact GHG-2 Project operational emissions would not be completely offset by on-site Project design features. This is identified as a significant impact.

2.7.5 Mitigation

After analyzing and requiring all reasonable and feasible on-site measures for avoiding or reducing GHG emissions, including the project design features and strategies recommended by CARB in the Scoping Plan Second Update, the Applicant has committed to reducing Project emissions to "net zero" through the purchase of additional off-site carbon credits. The Project's commitment to achieve net zero emissions would be realized through the purchase and retirement of off-site carbon offsets. This framework would ensure that the Project results in achieving carbon neutrality (i.e., no net GHG emissions.)

CEQA Guidelines recognize that in appropriate situations, off-site actions, which may include purchased offsets, may be used as attenuation for GHG emissions. CEQA Guidelines Section 15126.4(c)(3), expressly authorizes the use of off-site carbon offsets to mitigate GHG emissions, and Section 15126.4(c)(2) states that reductions in emissions may result "from a project through implementation of project features, project design, or other measures, …". CARB also recognizes that it may be appropriate to mitigate a project's emissions through purchasing and retiring carbon credits issued by a recognized and reputable, accredited carbon registry when on site measures or regional investments are infeasible or non-effective. Therefore, in addition to the building design PDFs identified above, in order for the Project to achieve carbon neutrality (i.e., no net GHG emissions through offset to zero); the Applicant shall complete the following:

M-GHG-1 Prior to issuance of the first grading permit, the Applicant shall provide evidence to the County PDS that they have purchased and retired carbon credits, in the amount of 4,411 MT CO_2e (note: this number reflects all the construction-related GHG emissions after applying all Project design features and reductions along with a one-time vegetation loss) pursuant to the performance standards and requirements described below. Construction emissions include all grading, site preparation, vegetation removal, worker trips, building construction and architectural coatings related to GHG emissions.

a. The carbon offsets that are purchased to reduce GHG emissions shall achieve real, permanent, quantifiable, verifiable, and enforceable reductions as set forth in Cal. Health & Saf. Code Section 38562(d)(1).

b. One carbon offset credit shall mean the past reduction or sequestration of one metric ton of carbon dioxide equivalent that is "not otherwise required" (CEQA Guidelines section 15126.4[c][3]).

c. Carbon offsets shall be purchased through a CARB-approved registry, such as the Climate Action Reserve, American Carbon Registry, or Verified Carbon Standard, or any registry approved by CARB to act as a registry under the State's cap-and-trade program. If no CARB-approved registry is in existence, then the Applicant or its designee shall purchase off-site carbon offset credits from any other reputable registry or entity, to the satisfaction of the Director of PDS.

d. The County will consider, to the satisfaction of the Director of PDS, the following geographic priorities for GHG reduction features, and off-site carbon offset projects: (1) Project design features/on-site reduction measures; (2) off site within the unincorporated areas of the County of San Diego; (3) off site within the County of San Diego; (4) off site within the State of California; (5) off site within the United States; and (6) off site internationally.

M-GHG-2 Prior to the County's issuance of building permits for each implementing Site Plan ("D" Designator), the Project Applicant or designee shall provide evidence to PDS (consisting of documentation from the issuing registry or a County-approved third party verifier) that the Project Applicant or designee has purchased and retired carbon offsets for the incremental portion of the Project within the Site Plan in a quantity sufficient to offset, for a 30-year period, the operational GHG emissions from that incremental amount of development to net zero, consistent with the performance standards and requirements set forth below. The amount of carbon offsets required for each implementing Site Plan shall be based on the GHG emissions for each land use within the implementing Site Plan, as identified in ~~the~~ Table 2.7-4, *Operational GHG Emissions and Off-Site Carbon Offsets Per Land Use*. The Project's operational emissions would be 5,222 MT CO_2e at the time of

full buildout.[2] Therefore, the Project shall be required to reduce the annual emissions by 5,222 MT CO_2e/year for a 30-year period (project life) or a total of 156,660 MT CO_2e. The "Project life" is 30 years, which is consistent with the methodology used by the South Coast Air Quality Management District's GHG guidance (SCAQMD 2008). The Project Applicant shall include in each implementing Site Plan a tabulation that identifies the overall carbon offsets required to mitigate the entire Project's GHG emissions, the amount of carbon offsets purchased to date, and the remaining carbon offsets required to reduce the Project's emissions to net zero.

a. The carbon offsets that are purchased to reduce GHG emissions shall achieve real, permanent, quantifiable, verifiable, and enforceable reductions as set forth in Cal. Health & Saf. Code Section 38562(d)(1).

b. One carbon offset credit shall mean the past reduction or sequestration of one metric ton of carbon dioxide equivalent that is "not otherwise required" (CEQA Guidelines section 15126.4[c][3]).

c. Carbon offsets shall be purchased through a CARB-approved registry, such as the Climate Action Reserve, American Carbon Registry, or Verified Carbon Standard. or any registry approved by CARB to act as a registry under the State's cap-and-trade program. If no CARB-approved registry is in existence, then the Applicant or its designee shall purchase off-site carbon offset credits from any other reputable registry or entity to the satisfaction of the Director of PDS.

d. The County will consider, to the satisfaction of the Director of PDS, the following geographic priorities for GHG reduction features, and off-site carbon offset projects: (1) Project design features/on-site reduction measures; (2) off site within the unincorporated areas of the County of San Diego; (3) off site within the County of San Diego; (4) off site within the State of California; (5) off site within the United States; and (6) off site internationally.

Relative to operational emissions, this EIR acknowledges that the Project's GHG emissions estimates are conservative because new technological improvements, scientific advancements, improvements in fuel efficiency or other similar advancements could potentially result in a greater reduction in the total MT CO_2e operational emissions being realized from the Project. As a result, an Updated Operational Emissions Report may be prepared at the Project Applicant's election, subject to the requirements described herein, that demonstrates based on substantial evidence that greater GHG efficiencies occur due to such advancements, or improvements in fuel efficiency or other similar advancements that has resulted in a greater reduction in the total operational emissions of the Project than what has been evaluated herein. The Updated Operational Emissions Report shall be prepared by a County-approved, qualified air quality and GHG technical specialist

[2] As stated above, this is a conservative number as it does not take into account CO_2e reductions associated with required Project landscaping and native habitat purchase.

and shall be based upon calculations that utilize a County-approved model or methodology. The calculations shall be based upon an emissions inventory of the Project's operational emissions, including emissions from mobile sources, energy, area sources, water consumption, and solid waste. The County may reduce the amount of GHG credits required to be purchased at the next site plan approval phase and the associated building permits issued per that subsequent site plan, if the County Director of PDS approves the Updated Operational Emissions Report and determines that the Applicant has demonstrated by substantial evidence that changes in State regulation or law, or other increased building efficiencies, have reduced the total MT CO_2e emitted by the Project and the reduction to the total carbon offsets, is consistent with the Project commitment to achieve and maintain carbon neutrality (i.e., net zero emissions) for the 30-year life of the Project. This reduction, if approved, will be included in the tabulation provided by the Project Applicant to the Director of PDS with each implementing Site Plan.

2.7.6 Conclusion

The Project Applicant proposes to off-set all Project GHG emissions, related to both construction and operations, to net zero. It is acknowledged that the purchase of those offsets is conservative because the impact number does not take into account CO_2e reductions associated with required Project landscaping and native habitat purchase. Through this offset of all Project GHG emissions (i.e., to net neutrality), through Mitigation Measures GHG-1 and GHG-2, the Proposed Project would have less than significant GHG impacts. The mitigated Project would not generate GHG emissions that may have a significant impact on the environment because the mitigated Project would have no net increase in GHG emissions, as compared to the existing environmental setting (CEQA Guidelines Section 15064.4[b][1]). Because the mitigated Project would have no net increase in the GHG emissions level, the mitigated Project would not make a cumulatively considerable contribution to global GHG emissions.

Table 2. 7-1
GLOBAL WARMING POTENTIALS AND ATMOSPHERIC LIFETIMES OF COMMON GHGs

Greenhouse Gas	Atmospheric Lifetime (Years)	100-year GWP[1]
Carbon Dioxide (CO_2)	50-200	1
Methane (CH_4)	12	25
Nitrous oxide (N_2O)	114	298
HFC-134a[2]	14	1,430
PFC[3]: Tetraflouromethane (CF_4)	50,000	7,390
PFC: Hexafluoroethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: IPCC 2007
[1] GWPs are calculated over 100-year time horizon.
HFC = hydrofluorocarbon
PFC = perfluorocarbon

Table 2.7-2
ESTIMATED CONSTRUCTION EMISSIONS

Source	Emissions (MT CO_2e)
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
One-Time Loss Through Sequestration	729
TOTAL	**4,411**

Model output data for construction emissions excluding sequestration is provided in Appendix A of Appendix J to this EIR. Sequestration data is provided in the Appendix J Supplement Attachment A to this Revised DEIR.
Note: Totals may not add up exactly due to rounding.

Table 2.7-3
ESTIMATED ANNUAL GHG EMISSIONS WITH PROJECT DESIGN FEATURES AND STATE AND FEDERAL MANDATES

Source	Emissions (MT CO_2e)
Area	329
Energy	306
Mobile	4,207
Waste	40
Water (including wastewater treatment)	193
WTWRF Generators	147
TOTAL	**5,222**

Source: CalEEMod (output data and mobile source emission reductions information are provided in the Appendix J Supplement Attachment C to this Revised DEIR).

Table 2.7-4
OPERATIONAL GHG EMISSIONS AND OFF-SITE CARBON OFFSETS PER LAND USE

	Single Family	Multi Family	Center House	Park	WTWRF
Emissions (MT CO_2e)	2,215.13	2,840.44	6.89	12.39	147.00
Percent of Total Emissions	42.42%	54.40%	0.13%	0.24%	2.82%
Carbon Offsets Needed	2,215.13	2,840.44	6.89	12.39	147.00
Number of Units	193	260	1	1	1
Carbon Offset per Unit/Use	11.48	10.92	6.89	12.39	147.00

Source: Appendix J