4.5 GREENHOUSE GAS EMISSIONS

This section of the EIR evaluates potential GHG impacts resulting from implementation of the proposed project. The analysis in this section is based on the *Greenhouse Gas Emissions Technical Report* (HELIX 2020b) prepared for the project, which is included as Appendix G of this EIR.

4.5.1 Existing Conditions

4.5.1.1 Global Climate Change Overview

Global climate change refers to changes in average climatic conditions over the entire Earth, including temperature, wind patterns, precipitation, and storms. Global temperatures are moderated by naturally occurring atmospheric gases. These gases are commonly referred to as GHGs because they function like a greenhouse by letting light in but preventing heat from escaping, thus warming the Earth's atmosphere. These gases allow solar radiation (sunlight) into the Earth's atmosphere but prevent radiative heat from escaping, thus warming the Earth's atmosphere.

GHGs are emitted by natural processes and human (anthropogenic) activities. Anthropogenic GHG emissions are primarily associated with (1) the burning of fossil fuels during motorized transport, electricity generation, natural gas consumption, industrial activity, manufacturing, and other activities; (2) deforestation; (3) agricultural activity; and (4) solid waste decomposition.

The temperature record shows a decades-long trend of warming, with 2018 ranked as the fourth warmest year on record with an increase of 1.5 degrees Fahrenheit compared to the 1951-1980 average. Globally, 2018's temperatures rank behind the three warmest years on record—2016, 2017 and 2015 (National Aeronautics and Space Administration [NASA] 2019). GHG emissions from human activities are the most significant driver of observed climate change since the mid-20th century (United Nations Intergovernmental Panel on Climate Change [IPCC] 2013). The IPCC constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The statistical models show a "high confidence" that temperature increase caused by anthropogenic GHG emissions could be kept to less than two degrees Celsius relative to pre-industrial levels if atmospheric concentrations are stabilized at about 450 parts per million (ppm) carbon dioxide equivalent (CO_2e) by the year 2100 (IPCC 2014).

4.5.1.2 Types of Greenhouse Gases

The GHGs, as defined under California's Assembly Bill (AB) 32, include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Each of these GHGs are described below.

Carbon Dioxide. CO_2 is the most important and common anthropogenic GHG. CO_2 is an odorless, colorless GHG. Natural sources include the decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungi; evaporation from oceans; and volcanic outgassing. Anthropogenic sources of CO_2 include burning fuels, such as coal, oil, natural gas, and wood. Data from ice cores indicate that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years. The atmospheric CO_2 concentration in 2010 was 390 ppm, 39 percent above the concentration at the start of the Industrial Revolution (about 280 ppm in 1750). As of January 2020, the CO_2 concentration exceeded 412 ppm (National Oceanic and Atmospheric Administration [NOAA] 2020).

Methane. CH_4 is the main component of natural gas used in homes. A natural source of methane is from the decay of organic matter. Geological deposits known as natural gas fields contain methane, 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 is produced by both natural and human-related sources. N_2O is emitted during agricultural and industrial activities, as well as during the combustion of fossil fuels and solid waste. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic (fatty) acid production, and nitric acid production.

Hydrofluorocarbons. Fluorocarbons are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. Chlorofluorocarbons are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at Earth's surface). Chlorofluorocarbons were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone; therefore, their production was stopped as required by the 1989 Montreal Protocol.

Sulfur Hexafluoride. SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semi-conductor manufacturing, and as a tracer gas for leak detection.

GHGs have long atmospheric lifetimes that range from one year to several thousand years. Long atmospheric lifetimes allow for GHGs to disperse around the globe. Because GHGs vary widely in the power of their climatic effects, climate scientists have established a unit called global warming potential (GWP). The GWP of a gas is a measure of both potency and lifespan in the atmosphere as compared to CO_2. For example, because methane and N_2O are approximately 25 and 298 times more powerful than CO_2, respectively, in their ability to trap heat in the atmosphere, they have GWPs of 25 and 298, respectively (CO_2 has a GWP of 1). CO_2e is a quantity that enables all GHG emissions to be considered as a group despite their varying GWP.

4.5.1.3 GHG Inventories

Global and National GHG Inventories

In 2014, total GHG emissions worldwide were estimated at 48,892 million metric tons (MMT) of CO_2e emissions (World Resource Institute [WRI] 2020). The U.S. contributed the second largest portion (13 percent) of global GHG emissions in 2014. The total U.S. GHG emissions was 6,319 MMT CO_2e in 2019, of which 82 percent was CO_2 emission (WRI 2020). On a national level, approximately 27 percent of GHG emissions were associated with transportation and about 38 percent were associated with electricity generation (WRI 2020).

State GHG Inventory

The CARB performed statewide inventories for the years 1990 to 2017, as shown in Table 4.5-1, *California State Greenhouse Gas Emissions by Sector*. The inventory is divided into six broad sectors of economic activity: agriculture, commercial, electricity generation, industrial, residential, and transportation. Emissions are quantified in MMT CO_2e. As shown, statewide GHG source emissions totaled 431 MMT CO_2e in 1990, 471 MMT CO_2e in 2000, 449 MMT CO_2e in 2010, and 424 MMT CO_2e in

2017. Transportation-related emissions consistently contribute the most GHG emissions, followed by electricity generation and industrial emissions.

Table 4.5-1
CALIFORNIA STATE GREENHOUSE GAS EMISSIONS BY SECTOR

Sector	Emissions (MMT CO_2e) 1990	Emissions (MMT CO_2e) 2000	Emissions (MMT CO_2e) 2010	Emissions (MMT CO_2e) 2017
Agriculture and Forestry	18.9 (4%)	31.0 (7%)	33.7 (8%)	32.4 (8%)
Commercial	14.4 (3%)	14.1 (3%)	20.1 (4%)	23.3 (5%)
Electricity Generation	110.5 (26%)	105.4 (22%)	90.6 (20%)	62.6 (15%)
Industrial	105.3 (24%)	105.8 (22%)	101.8 (23%)	101.1 (24%)
Residential	29.7 (7%)	31.7 (7%)	32.1 (7%)	30.4 (7%)
Transportation	150.6 (35%)	183.2 (39%)	170.2 (38%)	174.3 (41%)
Unspecified Remaining	1.3 (<1%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
TOTAL	**430.7**	**471.1**	**448.5**	**424.1**

Source: CARB 2007 and CARB 2019
MMT = million metric tons; CO2e = carbon dioxide equivalent

Regional GHG Inventory

A San Diego regional emissions inventory that was prepared by the University of San Diego School of Law, Energy Policy Initiative Center (EPIC) accounted for the unique characteristics of the region (EPIC 2017). Its 2014 emissions inventory update for San Diego is presented in Table 4.5-2, *San Diego County GHG Emissions by Sector in 2014*. The sectors included in this inventory are somewhat different from those in the statewide inventory. Similar to the statewide emissions, transportation related GHG emissions contributed the most countywide, followed by emissions associated with energy use.

Table 4.5-2
SAN DIEGO COUNTY GHG EMISSIONS BY SECTOR IN 2014

Sector	2014 Emissions MMT CO_2e (% total)[1]
On-Road Transportation	1.46 (45%)
Electricity	0.76 (24%)
Solid Waste	0.34 (11%)
Natural Gas Consumption	0.29 (9%)
Agriculture	0.16 (5%)
Water	0.13 (4%)
Off-Road Transportation	0.04 (1%)
Wastewater	0.02 (1%)
Propane	0.01 (<0.5%)
TOTAL	**3.21**

Source: EPIC 2017
[1] Percentages may not total 100 due to rounding.
MMT = million metric tons; CO_2e = carbon dioxide equivalent

On-site GHG Inventory

For the project site, existing on-site sources of GHG emissions are from vehicle emissions associated with customers, employees, and vendors driving to and from the RV resort; emissions resulting from energy (i.e., electricity and natural gas) used in resort operation; emissions resulting from the disposal of solid waste; emissions from the energy required for the sourcing, conveyance and treatment of water and wastewater; and emissions from maintenance and landscaping activities. The existing on-site GHG emissions inventory was calculated using CalEEMod, described in Section 4.5.3. The estimated existing land use GHG emissions are presented in Table 4.5-3, *Estimated Existing On-site Land Use GHG Emissions*.

Table 4.5-3
ESTIMATED EXISTING ON-SITE LAND USE GHG EMISSIONS

Emission Sources	Emissions (MT CO_2e/year)
Area (e.g., painting and consumer products)	1.6 (<0.1%)
Energy (i.e., electricity and natural gas use)	389.4 (40.0%)
Vehicular (Mobile)	484.4 (49.8%)
Solid Waste	29.8 (3.1%)
Water and Wastewater	66.6 (7.0%)
TOTAL	**971.9**

Source: HELIX 2020b
Notes: Totals may not sum due to rounding.
MT = metric tons; CO_2e = carbon dioxide equivalent

4.5.2 Regulatory Setting

4.5.2.1 Federal

Federal Clean Air Act

The U.S. Supreme Court ruled on April 2, 2007, in *Massachusetts v. USEPA* that CO_2 is an air pollutant, as defined under the 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 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 (NHTSA). The standards were established on April 1, 2010 for 2012 through 2016 model year vehicles and on October 15, 2012 for 2017 through 2025 model year vehicles (USEPA 2017; USEPA and NHTSA 2012).

Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards

The USEPA and the NHTSA worked together on developing a national program of regulations to reduce GHG emissions and to improve fuel economy of light-duty vehicles. On April 1, 2010, the USEPA and NHTSA announced a joint Final Rulemaking that established standards for 2012 through 2016 model year vehicles. This was followed up on October 15, 2012, when the agencies issued a Final Rulemaking with standards for model years 2017 through 2025. On August 2, 2018, the agencies released a notice of proposed rulemaking—the Safer Affordable Fuel-Efficient Vehicles Rule for Model Years 2021-2026

Passenger Cars and Light Trucks (SAFE Vehicles Rule). The purpose of the SAFE Vehicles Rule is "to correct the national automobile fuel economy and GHG emissions standards to give the American people greater access to safer, more affordable vehicles that are cleaner for the environment (USEPA 2018)." The direct effect of the rule is to eliminate the standards that were put in place to gradually raise average fuel economy for passenger cars and light trucks under test conditions from 37 miles per gallon in 2020, to 50 miles per gallon in 2025. By contrast, the new SAFE Vehicles Rule freezes the average fuel economy level standards indefinitely at the 2020 levels. The new SAFE Vehicles Rule also results in the withdrawal of the waiver previously provided to California for that State's GHG and zero emissions vehicle (ZEV) programs under section 209 of the CAA. The combined USEPA GHG emission standards and NHTSA Corporate Average Fuel Economy (CAFE) standards resolve previously conflicting requirements under both federal programs and the standards of the State of California and other states that have adopted the California standards (USEPA 2017; USEPA and NHTSA 2012).

4.5.2.2 State

California Code of Regulations, Title 24, Part 6

CCR Title 24 Part 6, *California's Energy Efficiency Standards for Residential and Nonresidential Buildings*, were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. Energy-efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in GHG emissions.

The Title 24 standards are updated approximately every three years to allow consideration and possible incorporation of new energy efficiency technologies and methods. The 2019 Title 24 standards went into effect on January 1, 2020. The 2019 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 improvement to the residential standards is a requirement for on-site photovoltaic electricity generation (e.g., solar panels) for most new or modified residential building up to three stories high. The project proposes five-story residential buildings and thus, the solar panel requirement would not apply to the project.

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. Future development per the proposed project would be required to be designed to meet the current Title 24 energy efficiency standards.

California Green Building Standards Code

The California Green Building Standards Code (CALGreen; CCR Title 24, Part 11) is a code with mandatory requirements for new residential and nonresidential buildings (including industrial buildings) throughout California. The code is Part 11 of the California Building Standards Code in Title 24 of the CCR (CBSC 2019). The 2019 Standards went into effect on January 1, 2020.

The development of CALGreen 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.

CALGreen 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

On June 1, 2005, Executive Order (EO) S-3-05 proclaimed that California is vulnerable to climate change impacts. It declared that increased temperatures could reduce snowpack in the Sierra Nevada, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. In an effort to avoid or reduce climate change impacts, EO S-3-05 calls for a reduction in GHG emissions to the year 2000 level by 2010, to year 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

Assembly Bill 32 – Global Warming Solution Act of 2006

The California Global Warming Solutions Act of 2006, widely known as AB 32, requires that CARB 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.

Senate Bill 375

SB 375, the Sustainable Communities and Climate Protection Act of 2008, supports the State's climate action goals to reduce GHG emissions through coordinated transportation and land use planning with the goal of more sustainable communities.

Under the Sustainable Communities Act, CARB sets regional targets for GHG emissions reductions from passenger vehicle use. In 2010, CARB established these targets for 2020 and 2035 for each region covered by one of the State's metropolitan planning organizations (MPOs). CARB periodically reviews and updates the targets, as needed.

Each of California's MPOs must prepare a Sustainable Communities Strategy (SCS) as an integral part of its regional transportation plan (RTP). The SCS contains land use, housing, and transportation strategies that, if implemented, would allow the region to meet its GHG emission reduction targets. Once adopted by the MPO, the RTP/SCS guides the transportation policies and investments for the region. CARB must review the adopted SCS to confirm and accept the MPOs' determination that the SCS, if implemented, would meet the regional GHG targets. If the combination of measures in the SCS would not meet the regional targets, the MPO must prepare a separate alternative planning strategy (APS) to meet the targets. The APS is not a part of the RTP. Qualified projects consistent with an approved SCS or Alternative Planning Strategy categorized as "transit priority projects" would receive incentives to streamline CEQA processing. SANDAG is San Diego's local MPO and has responded to the requirements of SB 375 with the preparation of an RTP/SCS, *San Diego Forward: The Regional Plan* (SANDAG 2015).

Senate Bill 743

On September 27, 2013, California Governor Jerry Brown signed SB 743 into law and started a process that changes transportation impact analysis as part of CEQA compliance. These changes include the elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts for land use projects and plans in California. Further, parking impacts will not be considered significant impacts on the environment for select development projects within infill areas with nearby frequent transit service. According to the legislative intent contained in SB 743, these changes to current practice were necessary to more appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of GHG emissions.

Senate Bill 97

SB 97 required the Governor's Office of Planning and Research to develop recommended amendments to the State CEQA Guidelines for addressing GHG emissions, including the effects associated with transportation and energy consumption. The amendments became effective on March 18, 2010.

Executive Order B-30-15

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

Senate Bill 32 and Assembly Bill 197

As a follow-up to AB 32 and in response to EO-B-30-15, SB 32 was passed by the California legislature in August 2016 to codify the EO's California GHG emission reduction target of 40 percent below 1990 levels by 2030 and requires the State to invest in the communities most affected by climate change. AB 197 establishes a legislative committee on climate change policies to help continue the State's activities to reduce GHG emissions.

Assembly Bill 1493 – Vehicular Emissions of Greenhouse Gases

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 bind 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 (CARB 2017a). 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 packet of standards called Advanced Clean Cars (CARB 2017a).

Assembly Bill 341

The State legislature enacted AB 341 (California Public Resource Code Section 42649.2), increasing the solid waste 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. The final regulation was approved by the Office of Administrative Law on May 7, 2012 and went into effect on July 1, 2012.

Executive Order S-01-07

This EO, signed on January 18, 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 an 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.

Senate Bill 350

Approved on October 7, 2015, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard eligible resources, including solar, wind, biomass, and geothermal. In addition, large utilities are required to develop and submit Integrated Resource Plans to detail how each entity will meet their customers resource needs, reduce GHG emissions, and increase the use of clean energy.

Senate Bill 100

Approved by Governor Brown on September 10, 2018, SB 100 extends the renewable electricity procurement goals and requirements of SB 350. SB 100 requires that all retail sale of electricity to California end-use customers be procured from 100 percent eligible renewable energy resources and zero-carbon resources by the end of 2045.

California Air Resources Board: Scoping Plan

On December 11, 2008, CARB adopted the Scoping Plan (CARB 2008) 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 VMT and vehicle GHG emissions through fuel and efficiency measures. These measures would be implemented statewide rather than on a project by project basis.

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 (CARB 2014). 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. In December 2017, CARB adopted the *2017 Climate Change Scoping Plan Update, the Strategy for Achieving California's 2030 Greenhouse Gas Target,* to reflect the 2030 target set by EO B-30-15 and codified by SB 32 (CARB 2017b).

4.5.2.3 Local

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 underlying purpose 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 the region as stipulated under SB 375. 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 an increase in 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. General urban form goals, policies, and objectives are summarized as follows:

- Mix compatible uses.
- Take advantage of compact building design.
- Create a range of housing opportunities and choices.
- Create walkable neighborhoods.
- Foster distinctive, attractive communities with a strong sense of place.
- Preserve open space, natural beauty, and critical environmental areas.
- Strengthen and direct development towards existing communities.
- Provide a variety of transportation choices.
- Make development decisions predictable, fair, and cost-effective.
- Encourage community and stakeholder collaboration in development decisions.

The Regional Plan also addresses border issues, providing an important guideline for communities that have borders with Mexico. In this case, the goal is to create a regional community where San Diego, its neighboring counties, tribal governments, and northern Baja California mutually benefit from San Diego's varied resources and international location.

On February 22, 2019, the SANDAG Board of Directors approved an action plan to develop a new vision for the 2021 Regional Plan that would transform the way people and goods move throughout the region. Development of the 2021 Regional Plan, including the associated projects, programs, and

policies, is underway and going through the planning process with an anticipated adoption by late 2021. While work progresses to develop this new vision, SANDAG prepared and adopted a 2019 Federal RTP (2019 Federal RTP; SANDAG 2019b) that complies with federal requirements for the development of regional transportation plans, retains air quality conformity approval from the U.S. Department of Transportation, and preserves funding for the region's transportation investments. The 2019 Federal RTP builds on The 2015 Regional Plan with updated project costs and revenues and a new regional growth forecast.

City of La Mesa Climate Action Plan

The City's Climate Action Plan (CAP) was adopted in March 2018. The CAP describes the 2010 GHG emissions baseline and forecasted emissions for 2020 and 2035, and identifies achievable, measurable strategies and actions for the City to implement to reduce emissions to 15 percent below 2010 levels by 2020 and 53 percent below 2010 levels by 2035 (City 2018). These CAP reduction goals were designed to enable the City to meet the 2020 GHG reduction mandates of AB 32, the 2030 GHG reduction mandates SB 32, and to be on-track to meet the 2050 of EO-S-3-05 goal of GHG emissions 80 percent below 1990 levels by 2050. The CAP contains reduction measures within the City's direct influence to achieve the City's 2020 and 2035 GHG reduction targets in five strategy areas: energy; transportation and land use; water; solid waste; and green infrastructure (City 2018).

4.5.3 Methodology and Assumptions

4.5.3.1 Emissions Modeling

The project's GHG emissions were calculated using the CalEEMod, Version 2016.3.2. CalEEMod is a computer model that estimates criteria air pollutant and greenhouse gas emissions from mobile (i.e., vehicular) sources, area sources (fireplaces, woodstoves, and landscape maintenance equipment), energy use (electricity and natural gas used in space heating, ventilation, and cooling; lighting; and plug-in appliances), water use and wastewater generation, and solid waste disposal. Emissions are estimated based on land use information input to the model by the user. Refer to Section 4.1.3.1 of this EIR for additional details regarding emissions modeling.

4.5.3.2 Construction Emissions

The methodology and assumptions utilized in the construction emissions modeling of GHG emissions is the same as used for criteria air pollutants, as described in detail in Section 4.1.3.2 of this EIR.

4.5.3.3 Operational Emissions

Area Source Emissions

The CalEEMod module estimates the GHG emissions that would occur from the use of hearths (e.g., wood or gas fireplaces and wood stoves), and landscaping equipment. This module also estimates emissions due to use of consumer products and architectural coatings that have VOCs; however, these sources do not emit GHGs. The project would not include wood burning fireplace or woodstoves; the modeling assumed only natural gas hearths.

The use of landscape equipment emits GHGs associated with the equipment's fuel combustion. CalEEMod estimates the number and type of equipment needed based on the number of summer days

given the project's location as entered in the project characteristics module. The model defaults for landscaping equipment were assumed.

Vehicle (Mobile) Sources

Operational emissions from mobile source emissions are associated with project-related vehicle trip generation and trip length. Based on the trip generation rate from the TIA prepared for the project, the project would generate 5,415 average daily trips and the existing land use generates 668 average daily trips for a net increase of 4,747 average daily trips. The TIA also analyzed the project's VMT and determined that each trip would have an average distance of 4.83 miles (Kimley Horn 2020). All CalEEMod default trip rates, purposes and distances were replaced by the project specific trip data from the TIA.

Energy Source

GHGs are emitted as a result of activities in buildings for which electricity and natural gas are used as energy sources. GHGs are generated during the generation of electricity from fossil fuels off-site in power plants. These emissions are considered indirect and are calculated in CalEEMod as associated with a building's operation.

CalEEMod default energy values are based on the CEC-sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies, which identify energy use by building type and climate zone. Each land use type input to the land use module is mapped in the energy module to the appropriate CEUS and RASS building type. Because these studies are based on older buildings, adjustments have been made in CalEEMod to account for changes to Title 24 building codes. The default adjustment is to the 2016 Title 24 energy code (part 6 of the building code).

Solid Waste Sources

The disposal of solid waste produces GHG emissions from anaerobic decomposition in landfills, incineration, and transportation of waste. CalEEMod determines the GHG emissions associated with disposal of solid waste into landfills. Portions of these emissions are biogenic. CalEEMod methods for quantifying GHG emissions from solid waste are based on the IPCC method using the degradable organic content of waste. Existing land use GHG emissions associated with waste disposal were all calculated using CalEEMod's default parameters. A conservative 25 percent solid waste diversion rate was applied in CalEEMod to the new construction and redevelopment that would occur to account for mandatory compliance with AB 341.

Water and Wastewater Sources

The amount of water used, and wastewater generated, by a project has indirect GHG emissions associated with it. These emissions are a result of the energy used to supply, distribute, and treat the water and wastewater. In addition to the indirect GHG emissions associated with energy use, wastewater treatment can directly emit both methane and nitrous oxide.

CalEEMod uses default electricity intensity values for various phases of supplying and treating water from CEC's *Refining Estimates of Water-Related Energy Use in California*. The model estimates water/ wastewater emissions by multiplying the total projected water/wastewater demand by the applicable water electricity intensities and by the utility intensity GHG factors.

The default CalEEMod water use assumptions were used for the GHG emissions estimates for existing land uses and operation of the project. For the project's water and wastewater GHG emissions, an overall 20 percent reduction in water use was applied in the CalEEMod mitigation section to account for recent requirements of CALGreen.

4.5.4 Significance Thresholds

According to Appendix G of the CEQA Guidelines, a significant impact associated with GHG emissions would occur if implementation of the proposed project would result in any of the following:

1. Would the project generate GHGs, either directly or indirectly, that may have a significant impact on the environment?

2. Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of GHGs?

4.5.5 Impact Analysis

4.5.5.1 Generation of GHG Emissions

Threshold 1: Would the project generate GHGs, either directly or indirectly, that may have a significant impact on the environment?

To determine whether the project would result in emissions that may have a significant impact on the environment, the project's GHG emissions were compared to the GHG emissions efficiency threshold of 3.46 MT CO_2e per capita by the year 2035 selected as a target by the City for GHG reductions in the CAP (City 2018). This target was developed to meet the statewide GHG emissions reduction target of 40 percent below 1990 levels by 2030 and be on track to meet the 80 percent below 1990 levels by 2050 target in accordance with SB 32 and EO S-3-05.

A 2035 target value between the 2030 and 2050 state reduction targets would require GHG reductions of 50 percent below 1990 levels. A 50 percent reduction below 1990 levels is equivalent to a 53 percent reduction below 2010 levels. A 53 percent reduction below La Mesa's 2010 baseline of 7.37 MT CO_2e per capita would be 3.46 MT CO_2e per capita (City 2018).

Construction Emissions

GHG emissions generated during project construction activities were estimated using CalEEMod as described in Section 4.1.3.2. Emissions of GHGs related to the construction of the project would be temporary. As shown in Table 4.5-4, *Construction GHG Emissions*, the total estimated GHG emissions associated with construction of the project would be approximately 3,679 MT CO_2e. Neither the SDAPCD nor the City have adopted thresholds for determining the significance of a project's temporary construction GHG emissions. To be conservative in accounting for all the project's GHG emissions, the construction period emissions were amortized (i.e., averaged) over the anticipated 30-year lifespan of the project buildings and added to the project's operational emissions. Averaged over 30 years, the proposed construction activities would contribute approximately 122.6 MT CO_2e emissions per year.

Table 4.5-4
CONSTRUCTION GHG EMISSIONS

Project Phase and Year	Emissions (MT CO_2e)
Phase 1 2021	325.7
Phase 1 2022	1,330.1
Phase 1 2023	1,008.0
Phase 2 2023	98.8
Phase 2 2024	643.3
Phase 2 2025	273.1
TOTAL	**3,679.0**
Amortized Emissions (Total Emission/30 Years)	*122.6*

Source: HELIX 2020b
Notes: Totals may not sum due to rounding.
MT = metric tons; CO_2e = carbon dioxide equivalent

Operational Emissions

The project's operational GHG emissions and the existing land use GHG emissions were estimated using CalEEMod as described in Section 4.5.3.3. The project's net annual operational emissions would be the total project annual emissions for the first year of full buildout, after completion of both Phase 1 and Phase 2 in 2025, plus the amortized construction emissions (described above) and minus the existing land use emissions that would occur without implementation of the project. As shown in Table 4.5-5, *Net Operational GHG Emissions*, the project would result in approximately 6,385 MT CO_2e per year.

Table 4.5-5
NET OPERATIONAL GHG EMISSIONS

Project Phase and Source	Emissions (MT CO_2e/year)
Phase 1 Area	289.1
Phase 1 Energy	1,820.6
Phase 1 Vehicular (Mobile)	2,462.8
Phase 1 Solid Waste	117.9
Phase 1 Water and Wastewater	280.5
Phase 1 Subtotal[1]	*4,970.9*
Phase 2 Area	136.7
Phase 2 Energy	850.5
Phase 2 Vehicular (Mobile)	1,093.9
Phase 2 Solid Waste	52.9
Phase 2 Water and Wastewater	129.3
Phase 2 Subtotal[1]	*2,263.4*
Project Total (Phase 1 Subtotal + Phase 2 Subtotal)	7,234.3
Amortized Construction Emissions (from Table 4.5-4)	122.6
Less Existing Land Use Emissions (from Table 4.5-3	(971.9)
Net Emissions	**6,385.0**
Net Emissions Per Capita[2]	**2.25**
Threshold (MT CO_2e per capita per year)	*3.46*
Exceed Threshold?	***No***

Source: HELIX 2020b

[1] Totals may not sum due to rounding.

[2] Net emissions per capita = net emissions divided by the estimated future project population of 2,717 residents.

MT = metric tons; CO_2e = carbon dioxide equivalent

For comparison with the City's 2035 GHG reduction target from the CAP, the project's net operational emissions were divided by the project's estimated future population. Based on the emissions modeling, the CalEEMod default population density for high-rise multi-family apartments for San Diego County would be 2.86 persons per DU and the project's future residential population would be approximately 2,717 residents. As shown in Table 4.5-5, the project's per capita emissions would be approximately 2.25 MT CO_2e per year, below the City's GHG emissions target of 3.46 MT CO_2e per capita by the year 3035. Therefore, the project would not generate GHG emissions that may have a significant impact on the environment. Associated impacts would be less than significant.

4.5.5.2 Conflicts with GHG Reduction Plans, Policies, or Regulations

Threshold 2: Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of GHGs?

The City's CAP describes the 2010 GHG emissions baseline and forecasted emissions for 2020 and 2035, and identifies achievable, measurable strategies and actions for the City to implement to reduce emissions to 15 percent below 2010 levels by 2020 and 53 percent below 2010 levels by 2035 (City 2018). These CAP reduction goals were designed to enable the City to meet the 2020 GHG reduction mandates of AB 32, the 2030 GHG reduction mandates SB 32, and to be on-track to meet the 2050 of EO S-3-05 goal of GHG emissions 80 percent below 1990 levels by 2050.

The CAP contains reduction measures within the City's direct influence to achieve the City's 2020 and 2035 GHG reduction targets in five strategy areas: energy; transportation and land use; water; solid waste; and green infrastructure (urban forest). The project is within 0.5 mile of the 70th Street Trolley Station, which serves the MTS Green Line Trolley. Due the project's proposed high-density multi-family housing and proximity to a major transit stop, the project would be considered TOD. The project would also add pedestrian and bicycle lane/sidewalks on Alvarado Road and add pedestrian and bicycle access to the 70th Street Trolley Station. Therefore, the project would support the CAP Transportation and Land Use reduction strategies and measures T-1, *Bicycle and Pedestrian Infrastructure Development*, and T-4*, Mixed-Use and Transit-Oriented Development*. In addition, the project's conformance to the 2019 Title 24 Part 6 building energy efficiency code and Part 11 CALGreen code would ensure the project is consistent with the CAP building energy, water use, and solid waste diversion strategies and measures. In addition, the project would be consistent with the green infrastructure strategies and measures by implementing the 2019 CALGreen and City standards for public right of way and parking lot shade trees and by restoring the Alvarado Creek channel with native planting.

As discussed in Section 4.5.1.3, the transportation sector is the largest source of GHG emissions in the state and in the San Diego region. A project's GHG emissions from cars and light trucks are directly correlated to the project's VMT. A reduction of VMT through implementation of TOD projects is a key component of SANDAG's Regional Plan to mitigate the adverse effects of traffic congestion and reduce GHG emissions (SANDAG 2015). The TIS analyzed the project's VMT per capita and compared it to the San Diego regional VMT per capita. The regional VMT per capita is 15.3 miles and the project VMT per capita would be 13.5 miles, based primarily on proximity to the transit station (Kimley Horn 2020).

The TIA also includes estimated VMT reductions from SANDAG's Mobility Management VMT Reduction Calculator Tool that would further reduce the project's VMT. These features would further reduce the project's mobile source GHG emissions by reducing VMT. The VMT reductions include:

- 1D Employer Transit Pass Subsidy: 0.3-percent VMT reduction
- 2A Transit Oriented Development: 5.2-percent VMT reduction
- 3A Parking Pricing: 7.5-percent VMT reduction
- 4B Pedestrian Facility Improvement: 1.4-percent VMT reduction
- 4D Bike Facility Improvement: 0.1-percent VMT reduction

Note that the employer transit pass subsidy and the parking pricing measures would need to be implemented by the developer and are not guaranteed at this time. In addition, as described in Section 4.5.5.1, the project's estimated GHG emissions per capita would be below the City's GHG emissions per capita reduction target selected for the CAP. Therefore, the project would be consistent with the reduction strategies and GHG emissions per capita target and would be consistent with the CAP. The project would implement TOD near the 70th Street Trolley Station and reduce VMT per capita, consistent with SANDAG's Regional Plan. Therefore, the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Associated impacts would be less than significant.

4.5.6 Mitigation Measures

4.5.6.1 Generation of GHG Emissions

No significant impacts related to generation of direct or indirect GHG emissions would result from implementation of the proposed project. Therefore, no mitigation measures are required.

4.5.6.2 Conflicts with GHG Reduction Plans, Policies, or Regulations

No significant impacts related to conflicts with GHG reduction plans, policies, or regulations would result from implementation of the proposed project. Therefore, no mitigation measures are required.

4.5.7 Significance Determination

The significance of GHG emissions impacts before and after mitigation is summarized in Table 4.5-6, *Significance Determination Summary of GHG Emissions Impacts*. Implementation of the proposed project would not result in any significant GHG emissions impacts. Impacts related to generation of GHG emissions and conflicts with GHG reduction plans, policies, or regulations would be less than significant, and no mitigation is required.

Table 4.5-6
SIGNIFICANCE DETERMINATION SUMMARY OF GHG EMISSIONS IMPACTS

Issue	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
Generation of GHG Emissions	Less than significant	None required	Less than significant
Conflicts with GHG Reduction Plans, Policies, or Regulations	Less than significant	None required	Less than significant