

4.8 GREENHOUSE GAS EMISSIONS

This section provides a discussion of global climate change (GCC), existing regulations pertaining to GCC, and an analysis of greenhouse gas (GHG) emissions associated with the proposed Nakase Nursery/Toll Brothers Project (proposed Project). This section summarizes information provided in the *Nakase Property Greenhouse Gas Analysis* (Urban Crossroads 2019b) prepared for the proposed Project. The *Nakase Property Greenhouse Gas Analysis* is included in Appendix G of this Environmental Impact Report (EIR).

4.8.1 Scoping Process

The City of Lake Forest (City) received 28 comment letters during the public review period of the Initial Study/Notice of Preparation (IS/NOP). For copies of the IS/NOP comment letters, refer to Appendix A of this EIR. One comment letter included comments related to GHG emissions. The letter from the California Department of Transportation (Caltrans) (August 13, 2018) suggests incorporating practices and policies into the Area Plan to reduce GHG emissions in accordance with Assembly Bill (AB) 32 and Senate Bill (SB) 375.

4.8.2 Existing Environmental Setting

4.8.2.1 Global Climate Change

GCC refers to the change in average meteorological conditions on the earth with respect to temperature, wind patterns, precipitation and storms. Global temperatures are regulated by naturally occurring atmospheric gases such as water vapor, carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). These gases, which trap heat in the atmosphere, are often referred to as GHGs. These particular gases are important due to their residence time (the duration they stay) in the atmosphere, which ranges from 10 years to more than 100 years. These gases allow solar radiation into the Earth's atmosphere but prevent radioactive heat from escaping, thus warming the Earth's atmosphere.

GHGs are released into the atmosphere by both natural and anthropogenic (human) activity. Without the natural GHG effect, the Earth's average temperature would be approximately 61 degrees Fahrenheit (°F), cooler than it currently is. The cumulative accumulation of GHGs in the Earth's atmosphere is considered to be the cause for the observed increase in the Earth's temperature. Higher global temperatures have many secondary effects:

- Increased air pollution
- Health effects such as risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat
- Changes in precipitation and snow melt
- Rising sea levels
- Reduction in agricultural production
- Increased abundance and range of invasive species and pests

- Increased risk of wildfire
- Alteration of natural ecosystems

These effects are detailed further in the *Nakase Property Greenhouse Gas Analysis (Urban Crossroads 2019b)*.

GCC is currently one of the most controversial environmental issues in the United States, and much debate exists within the scientific community about whether or not GCC is occurring naturally or as a result of human activity. Some data suggest that GCC has occurred over the course of thousands or millions of years. These historical changes to the Earth's climate have occurred naturally without human influence, as in the case of an ice age. However, many scientists believe that the climate shift taking place since the industrial revolution (1900) is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of GHGs in the Earth's atmosphere, including CO₂, CH₄, N₂O, and fluorinated gases. Many scientists believe that this increased rate of climate change is the result of GHGs resulting from human activity and industrialization over the past 200 years.

4.8.2.2 Primary Greenhouse Gases

The following discussion summarizes the characteristics of the primary GHGs:

- **Water Vapor (H₂O):** Water vapor is the most abundant, important, and variable GHG in the atmosphere. The main source of water vapor is evaporation from the oceans (approximately 85 percent). Other sources include: evaporation from other water bodies, sublimation (change from solid to gas) from sea ice and snow, and transpiration from plant leaves. Water vapor is not considered a pollutant. In the atmosphere, water vapor maintains a climate necessary for life. Changes in its concentration are primarily considered to be a result of climate feedback related to the warming of the atmosphere rather than a direct result of industrialization. A climate feedback is an indirect, or secondary, change, either positive or negative, that occurs within the climate system in response to a forcing mechanism. The feedback loop in which water is involved is critically important to projecting future climate change, and is described below.

As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to "hold" more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor, absorb more thermal energy, and warm the atmosphere. This cycle continues and is referred to as a "positive feedback loop." The extent to which this positive feedback loop will continue is unknown because there are also dynamics that hold the positive feedback loop in check. For example, when water vapor increases in the atmosphere, more of it will eventually also condense into clouds that are more able to reflect incoming solar radiation (thus allowing less energy to reach the Earth's surface and heat it up).

- **Carbon Dioxide (CO₂):** CO₂ is an odorless and colorless GHG. CO₂ is emitted from natural and man-made sources. Natural sources include: the decomposition of dead organic matter; respiration of bacteria, plants, animals and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources include the burning of coal, oil, natural gas, and wood. CO₂ is naturally removed from the air by photosynthesis, dissolution into ocean water, transfer to soils and ice caps, and chemical weathering of carbonate rocks.

Since the industrial revolution began in the mid-1700s, the sort of human activity that increases GHG emissions has increased dramatically in scale and distribution. Data from the past 50 years suggests a corollary increase in levels and concentrations. As an example, prior to the industrial revolution, CO₂ concentrations were fairly stable at 280 parts per million (ppm). Today, they are around 370 ppm, an increase of more than 30 percent. Left unchecked, the concentration of CO₂ in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources.

- **Methane (CH₄):** CH₄ is an extremely effective absorber of radiation, though its atmospheric concentration is less than CO₂ and its lifetime in the atmosphere is brief (10 to 12 years) compared to other GHGs. Methane has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other anthropogenic sources include fossil-fuel combustion and biomass burning.
- **Nitrous Oxide (N₂O):** N₂O, also known as laughing gas, is a colorless GHG. Concentrations of N₂O began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 parts per billion (ppb). N₂O is produced by microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil-fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant (e.g., in whipped cream bottles). It is also used in potato chip bags to keep chips fresh. It is used in rocket engines and in race cars. Nitrous oxide can be transported into the stratosphere, be deposited on the Earth's surface, and be converted to other compounds by chemical reaction.
- **Chlorofluorocarbons (CFCs):** CFCs are gases formed synthetically by replacing all hydrogen atoms in CH₄ or ethane (C₂H₆) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (i.e., the level of air at the Earth's surface). CFCs have no natural source, but were first synthesized in 1928. They were used for refrigerants, aerosol propellants, and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and CFCs are no longer being used. As a result, the levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

- **Hydrofluorocarbons (HFCs):** HFCs are synthetic, man-made chemicals that are used as a substitute for CFCs in applications such as automobile air conditioners and refrigerants. Out of all the GHGs, they are one of the groups with the highest global warming potential. The HFCs with the largest measured atmospheric abundances are (in order), HFC-23 (CHF_3), HFC-134a ($\text{CF}_3\text{CH}_2\text{F}$), and HFC-152a (CH_3CHF_2). Prior to 1990, the only significant hydrofluorocarbon emissions were of HFC-23. HFC-134a emissions are increasing due to its use as a refrigerant. The United States Environmental Protection Agency (EPA) estimates that concentrations of HFC-23 and HFC-134a are now about 10 parts per trillion (ppt) each, and that concentrations of HFC-152a are about 1 ppt.
- **Perfluorocarbons (PFCs):** PFCs have stable molecular structures and do not break down through chemical processes in the lower atmosphere. High-energy ultraviolet rays, which occur about 60 kilometers above the Earth's surface, are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6). The EPA estimates that concentrations of CF_4 in the atmosphere are over 70 ppt. The two main sources of PFCs are primarily aluminum production and semiconductor manufacture.
- **Sulfur Hexafluoride (SF_6):** SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. Out of all the GHGs, they are one of the groups with the highest global warming potential. The EPA indicates that concentrations in the 1990s were about 4 ppt. 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.

4.8.2.3 Greenhouse Gas Inventories

This section summarizes the latest information on global, national, California, and local GHG emission inventories.

Global Emissions. Worldwide anthropogenic (human) GHG emissions are tracked by the Intergovernmental Panel on Climate Change (IPCC) for industrialized nations (referred to as Annex I) and developing nations (referred to as Non-Annex I). Human GHG emissions data for Annex I nations are available through 2016. For the Year 2016, the sum of these GHG emissions totaled approximately 28,747,554 gigagrams (Gg) of carbon dioxide equivalent (CO_2e).

United States Emissions. California emitted 6,511,302 million metric tons of CO_2e (MMT CO_2e) in 2016. The United States, as a single country, was the number two producer of GHG emissions in 2016 (behind China). The primary GHG emitted by human activities in the United States was CO_2 , representing approximately 81.6 percent of total GHG emissions. CO_2 from fossil fuel combustion, which is the largest source of GHG emissions in the United States, accounted for approximately 93.5 percent of the GHG emissions.

State of California Emissions. The California Air Resources Board (CARB) compiles GHG inventories for the State of California. In 2004, California is estimated to have produced 492 MMT CO_2e . Despite a population increase of 16 percent between 1990 and 2004, California has significantly slowed the rate of growth of GHG emissions due to the implementation of energy efficiency programs as well as

adoption of strict emission controls. Based on the 2018 GHG inventory, which includes data for the years 2000–2016, California emitted 429.4 MMT CO₂e (including emissions resulting from imported electrical power) in 2016 (i.e., the latest year for which data are available). Although California’s rate of growth of GHG emissions is slowing, the State is still a substantial contributor to the total United States emissions inventory.

4.8.2.4 Existing Project Site Greenhouse Gas Emissions

The Project site is currently developed with a nursery. The estimated GHG emissions generated by the existing nursery are summarized in Table 4.8.A. As shown in Table 4.8.A, the existing operational emissions from the nursery on the Project site are approximately 599 metric tons of CO₂e (MT CO₂e) per year.

Table 4.8.A: Existing Project Site Greenhouse Gas Emissions

Existing Operational Activities	Total Greenhouse Gas Emissions (MT/yr)			
	CO ₂	CH ₄	N ₂ O	Total CO ₂ e
Nursery (all sources)	593.12	0.22	0.00	599.10

Source: *Nakase Property Greenhouse Gas Analysis* (Urban Crossroads 2019b).

CH₄ = methane

MT/yr = metric tons per year

CO₂ = carbon dioxide

N₂O = nitrous oxide

CO₂e = carbon dioxide equivalent

4.8.3 Regulatory Setting

4.8.3.1 Federal Regulations

Prior to the last decade, there have been no concrete federal regulations of GHGs or major planning for climate change adaptation. The following are federal actions regarding GHGs and fuel efficiency over the last decade.

GHG Endangerment. In *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497, which was decided on April 2, 2007, the United States Supreme Court found that four GHGs, including CO₂, are air pollutants subject to regulation under Section 202(a)(1) of the federal Clean Air Act (CAA). The Court held that the EPA Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- **Endangerment Finding:** The Administrator found that the current and projected concentrations of the six key well-mixed GHGs (i.e., CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆) in the atmosphere threaten the public health and welfare of current and future generations.

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

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed in the section titled “Clean Vehicles” below. After a lengthy legal challenge, the United States Supreme Court declined to review an Appeals Court ruling that upheld the EPA Administrator’s findings.

Clean Vehicles. Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the U.S.

On April 1, 2010, the EPA and the United States Department of Transportation (USDOT) National Highway Safety Administration announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the United States. The first phase of the national program applied to passenger cars, light-duty trucks, and medium-duty passenger vehicles for model years 2012 through 2016. This phase required these vehicles to meet an estimated combined average emissions level of 250 grams of CO₂ per mile, which is equivalent to 35.5 miles per gallon (mpg). The second phase applied to passenger cars, light-duty trucks, and medium duty passenger vehicles for model years 2017 through 2025. This phase required these vehicles to meet an estimated combined average emissions level of 163 grams of CO₂ per mile, which is equivalent to 54.5 mpg.

On September 15, 2011, the EPA and the USDOT issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks and buses, model years 2014 to 2018. For combination tractors, the agencies proposed engine and vehicle standards that would achieve up to a 20 percent reduction in CO₂ emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies proposed separate gasoline and diesel truck standards, which would achieve up to a 10 percent reduction for gasoline vehicles and a 15 percent reduction for diesel vehicles (12 and 17 percent, respectively, if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10 percent reduction in fuel consumption and CO₂ emissions.

Mandatory Reporting of GHGs. The Consolidated Appropriations Act of 2008, passed by Congress in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of GHGs Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 MT or more per year of GHG emissions are required to submit annual reports to the EPA.

New Source Review. The EPA issued a final rule on May 13, 2010, that established thresholds for GHG emissions that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule modified the requirements of the CAA permitting programs to limit which facilities are required to obtain Prevention of Significant Deterioration and Title V permits.

Standards of Performance for GHG Emissions for New Stationary Sources: Electric Utility Generating Units. On March 27, 2012, as required by a settlement agreement, the EPA proposed new performance standards for emissions of CO₂ for new, affected, fossil fuel-fired electric utility generating units. New sources greater than 25 megawatts (MW) would be required to meet an output-based standard of 1,000 pounds of CO₂ per megawatt hour (MWH), based on the performance of widely used natural gas combined cycle technology. On February 9, 2016, the United States Supreme Court issued a stay of this regulation pending litigation. Additionally, the current EPA Administrator has signed a measure to repeal the Clean Power Plan, including the CO₂ standards.

Cap and Trade. Cap and trade refers to a policy tool where emissions are limited to a certain amount and can be traded, or provides flexibility on how the emitter can comply. There currently is no federal GHG cap-and-trade program; however, some states have joined to create initiatives to provide a mechanism for cap and trade. The Western Climate Initiative partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. The partners were originally California, British Columbia, Manitoba, Ontario, and Quebec. However, Manitoba and Ontario are not currently participating. California linked with Quebec's cap and trade system January 1, 2014, and joint offset auctions took place in 2015.

SmartWay Program. The SmartWay Program is a public-private initiative among the EPA, large and small trucking companies, rail carriers, logistics companies, commercial manufacturers, retailers, and other federal and state agencies. Its purpose is to improve fuel efficiency and the environmental performance (reduction of both GHG emissions and air pollution) of the goods movement supply chains. SmartWay effectively refers to requirements geared towards reducing fuel consumption. Most large trucking fleets driving newer vehicles are compliant with SmartWay design requirements. Moreover, over time, all heavy-duty trucks will have to comply with the CARB GHG regulation that is designed with the SmartWay Program in mind to reduce GHG emissions by making them more fuel-efficient.

4.8.3.2 State Regulations

Assembly Bill 32. In September 2006, the California State Legislature enacted AB 32, which requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. "GHGs" as defined under AB 32 include CO₂, CH₄, N₂O, HFCs, PFCs, and SF. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride (NF₃), has also been added to the list of GHGs. CARB is the State agency charged with monitoring and regulating sources of GHGs. CARB approved the 1990 GHG emissions level of 427 MMT CO₂e on December 6, 2007. Therefore, emissions generated in California in 2020 are required to be equal to or less than 427 MMT CO₂e. Emissions in 2020 in a "business as usual" (BAU) scenario were estimated to be 596 MMT CO₂e, which do not account for reductions from AB 32 regulations. At that level, a 28.4 percent reduction was required to achieve

the 427 MMT CO₂e 1990 inventory. In October 2010, CARB prepared an updated 2020 forecast to account for the recession and slower forecasted growth. The forecasted inventory without the benefits of adopted regulation is now estimated at 545 MMT CO₂e. Therefore, under the updated forecast, a 21.7 percent reduction from BAU is required to achieve 1990 levels.

CARB Scoping Plan. The CARB 2008 Scoping Plan contains measures designed to reduce the State's emissions to 1990 levels by the year 2020 to comply with AB 32. The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector having a different emission reduction target. Most of the measures target the transportation and electricity sectors.

In November 2017, CARB released the final 2017 Scoping Plan Update, which identifies the State's post-2020 reduction strategy. The 2017 Scoping Plan Update reflects the 2030 target of a 40 percent reduction below 1990 levels, set by Executive Order (EO) B-30-15 and codified by SB 32. Key programs that the Scoping Plan Update builds upon include the Cap-and-Trade Regulation, the Low Carbon Fuel Standard, and much cleaner cars, trucks, and freight movement utilizing cleaner, renewable energy and strategies to reduce CH₄ emissions from agricultural and other wastes. The 2017 Scoping Plan establishes a new emissions limit of 260 MMT CO₂e for the year 2030, which corresponds to a 40 percent decrease in 1990 levels by 2030.

Senate Bill 32 and Assembly Bill 197. On September 8, 2016, Governor Jerry Brown signed SB 32 and its companion bill, AB 197. SB 32 requires the State to reduce statewide GHG emissions to 40 percent below 1990 levels by 2030, a reduction target that was first introduced in EO B-30-15. The new legislation builds upon the AB 32 goal of 1990 levels by 2020 and provides an intermediate goal to achieving EO S-3-05, which sets a statewide GHG reduction target of 80 percent below 1990 levels by 2050. AB 197 created a legislative committee to oversee regulators to ensure that CARB not only responds to the Governor, but to the Legislature as well.

Cap-and-Trade Program. The Scoping Plan identifies a cap-and-trade program as one of the key strategies for California to reduce GHG emissions. According to CARB, a cap-and-trade program will help put California on the path to meet its goal of reducing GHG emissions to 1990 levels by the year 2020 and ultimately achieving an 80 percent reduction from 1990 levels by 2050. Under cap and trade, an overall limit on GHG emissions from capped sectors is established, and facilities subject to the cap will be able to trade permits to emit GHGs within the overall limit.

Senate Bill 375 – Sustainable Communities and Climate Protection Act of 2008. Passing the Senate on August 30, 2008, SB 375 was signed by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40 percent of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires Metropolitan Planning Organizations (MPOs) to include sustainable community strategies in their Regional Transportation Plans (RTPs) for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for implementation of the strategies.

Assembly Bill 1493 – Pavley Regulations and Fuel Efficiency Standards. AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA’s denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the United States District Court for the District of Columbia in 2011.

Senate Bill 350 – Clean Energy and Pollution Reduction Act of 2015. In October 2015, the legislature approved and the Governor signed SB 350, which reaffirms California’s commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the renewables portfolio standard, higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle (EV) charging stations. Provisions for a 50 percent reduction in the use of petroleum statewide were removed from the bill because of opposition and concern that it would prevent the bill’s passage.

Executive Order S-3-05. Former California Governor Arnold Schwarzenegger announced on June 1, 2005, through EO S-3-05, the following reduction targets for GHG emissions:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an Executive Order, the goals are not legally enforceable for local governments or the private sector.

Executive Order S-01-07 – Low Carbon Fuel Standard. Governor Arnold Schwarzenegger signed EO S-01-07 on January 18, 2007. The order mandated that a statewide goal be established to reduce the carbon intensity of California’s transportation fuels by at least 10 percent by 2020. In particular, the EO S-01-07 established a Low Carbon Fuel Standard and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, the CARB, the University of California, and other agencies to develop and propose protocols for measuring the “life-cycle carbon intensity” of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan (SIP) for alternative fuels (State Alternative Fuels Plan adopted by the California Energy Commission on December 24, 2007) and was submitted to CARB for consideration as an “early action” item under AB 32. The CARB adopted the Low Carbon Fuel Standard on April 23, 2009. After revisions in response to litigation, the Final Rulemaking Package adopting the regulation was filed with the Office of Administrative Law (OAL) on October 2, 2015.

Executive Order S-13-08. EO S-13-08 states that “climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California’s economy, to the health and welfare of its population and to its natural resources.” Pursuant to the requirements in EO S-13-08, the 2009 California Climate Adaptation Strategy prepared by the California Natural Resources Agency was

adopted, which is the “. . . first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States.” Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order B-30-15. On April 29, 2015, Governor Edmund G. Brown, Jr. issued EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. EO B-30-15 aligns California’s GHG reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris in late 2015. In addition, EO B-30-15 sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050, and directs the CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of MMT CO₂e. EO B-30-15 also requires the State’s climate adaptation plan to be updated every 3 years, and for the State to continue its climate change research program, among other provisions. As with EO S-3-05, EO B-30-15 is not legally enforceable for local governments and the private sector. Legislation that would update AB 32 to make post-2020 targets and requirements a mandate is in process in the State Legislature.

Executive Order B-55-18 and Senate Bill 100. SB 100 and EO B-55-18 were signed by Governor Brown on September 10, 2018. Under the existing renewables portfolio standard, 25 percent of retail sales are required to be from renewable sources by December 31, 2016, 33 percent by December 31, 2020, 40 percent by December 31, 2024, 45 percent by December 31, 2027, and 50 percent by December 31, 2030. SB 100 raises California’s renewables portfolio standard requirement to 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. SB 100 also requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030. In addition to targets under AB 32 and SB 32, EO B-55-18 establishes a carbon neutrality goal for the state of California by 2045, and sets a goal to maintain net negative emissions thereafter. EO B-55-18 directs the California Natural Resources Agency, the California Environmental Protection Agency (CalEPA), the Department of Food and Agriculture, and the CARB to include sequestration targets in the Natural and Working Lands Climate Change Implementation Plan consistent with the carbon neutrality goal.

California Code of Regulations, Title 20, Appliance Efficiency Standards. California Code of Regulations (CCR), Title 20, Division 2, Chapter 4, Article 4, Sections 1601–1608: Appliance Efficiency Regulations, regulates the sale of appliances in California. The Appliance Efficiency Regulations include standards for both federally regulated appliances and non-federally regulated appliances. There are 23 categories of appliances included in the scope of these regulations. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles or other mobile equipment.

California Code of Regulations, Title 24, Energy Efficiency Standards and California Green Building Standards. CCR, Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The newest 2016 version of Title 24 was adopted by the California Energy Commission (CEC) and became effective on January 1, 2017.

CCR, Title 24, Part 11: California Green Building Standards Code (CALGreen), is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went into effect on January 1, 2011, and is administered by the California Building Standards Commission. CALGreen established mandatory green building standards in California. CALGreen is updated on a regular basis, with the most recent update consisting of the 2016 California Green Building Code Standards that became effective January 1, 2017.

Model Water Efficient Landscape Ordinance. The Model Water Efficient Landscape Ordinance (Model Ordinance) was required by AB 1881, the Water Conservation Act. The bill required local agencies to adopt a local landscape ordinance at least as effective in conserving water as the Model Ordinance by January 1, 2010. Reductions in water use of 20 percent consistent with (SB X7-7) 2020 mandate are expected upon compliance with the ordinance. Governor Brown's Drought Executive Order of April 1, 2015 (EO B-29-15) directed the California Department of Water Resources (DWR) to update the Model Ordinance through expedited regulation. The California Water Commission approved the revised Model Ordinance on July 15, 2015, effective December 15, 2015. New development projects that include landscape areas of 500 square feet (sf) or more are subject to the Model Ordinance. The revised ordinance requires:

- More efficient irrigation systems,
- Incentives for graywater usage,
- Improvements in on-site stormwater capture,
- Limiting the portion of landscapes that can be planted with high-water-use plants, and
- Reporting requirements for local agencies.

CARB Refrigerant Management Program. The CARB adopted a regulation in 2009 to reduce refrigerant GHG emissions from stationary sources through refrigerant leak detection and monitoring, leak repair, system retirement and retrofitting, reporting and recordkeeping, and proper refrigerant cylinder use, sale, and disposal. The regulation is set forth in Sections 95380 to 95398 of CCR Title 17. The rules implementing the regulation establish a limit on statewide GHG emissions from stationary facilities with refrigeration systems with more than 50 pounds of high global warming potential refrigerant. The refrigerant management program is designed to (1) reduce emissions of high global warming potential GHG refrigerants from leaky stationary, non-residential refrigeration equipment; (2) reduce emissions from the installation and servicing of refrigeration and air-conditioning appliances using high global warming potential refrigerants; and (3) verify GHG emission reductions.

Tractor-Trailer GHG Regulation. The tractors and trailers subject to this regulation must either use EPA SmartWay-certified tractors and trailers, or retrofit their existing fleet with SmartWay-verified technologies. The regulation applies primarily to owners of 53-foot (ft) or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-duty tractors that pull them on California highways. These owners are responsible for replacing or retrofitting their affected vehicles with compliant aerodynamic technologies and low-rolling-resistance tires. Sleeper cab tractors model year 2011 and later must be SmartWay certified. All other tractors must use SmartWay-verified, low-rolling-resistance tires. There are also requirements for trailers to have low-rolling-resistance tires and aerodynamic devices.

Phase 1 and 2 Heavy-Duty Vehicle GHG Standards. CARB has adopted a new regulation for GHG emissions from heavy-duty trucks and engines sold in California. It establishes GHG emission limits on truck and engine manufacturers and aligns with the national EPA rule for new trucks and engines. Existing heavy-duty vehicle regulations in California include engine criteria emission standards, tractor-trailer GHG requirements to implement SmartWay strategies (i.e., the Heavy-Duty Tractor-Trailer Greenhouse Gas Regulation), and in-use fleet retrofit requirements such as the Truck and Bus Regulation.

Senate Bill 97 and the CEQA Guidelines Update. Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code (PRC). The code states “(a) On or before July 1, 2009, the Office of Planning and Research shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the Office of Planning and Research pursuant to subdivision (a).” The Office of Planning and Research’s recommended amendments to the *State CEQA Guidelines* for addressing GHG emissions became effective on March 18, 2010.

The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The *State CEQA Guidelines* amendments fit within the existing CEQA framework by amending existing *State CEQA Guidelines* to reference climate change. A new section, *State CEQA Guidelines* Section 15064.4, was added to assist agencies in determining the significance of GHG emissions. The new section allows agencies the discretion to determine whether a quantitative or qualitative analysis is best for a particular project. However, little guidance is offered on the crucial next step in this assessment process—how to determine whether the project’s estimated GHG emissions are significant or cumulatively considerable. Also amended were *State CEQA Guidelines* Sections 15126.4 and 15130, which address mitigation measures and cumulative impacts, respectively. GHG mitigation measures are referenced in general terms, but no specific measures are championed. The revision to the cumulative impact discussion requirement (Section 15130) simply directs agencies to analyze GHG emissions in an EIR when a project’s incremental contribution of emissions may be cumulatively considerable; however, it does not answer the question of when emissions are cumulatively considerable. Section 15183.5 permits programmatic GHG analysis and later project-specific tiering, as well as the preparation of GHG reduction plans. Compliance with such plans can support a determination that a project’s cumulative effect is not cumulatively considerable, according to Section 15183.5(b).

4.8.3.3 Regional Regulations

South Coast Air Quality Management District (SCAQMD). SCAQMD is the agency responsible for air quality planning and regulation in the South Coast Air Basin (Basin). The SCAQMD addresses the impacts to climate change from projects subject to SCAQMD permits as a lead agency if they are the only agency having discretionary approval for the project and acts as a responsible agency when a land use agency must also approve discretionary permits for the project. The SCAQMD acts as an expert commenting agency for impacts to air quality. This expertise carries over to GHG emissions, so the agency helps local land use agencies through the development of models and emission thresholds that can be used to address GHG emissions.

SCAQMD Interim Thresholds. In 2008, SCAQMD formed a Working Group to identify GHG emissions thresholds for land use projects that could be used by local lead agencies in the Basin. The Working Group developed several different options that are contained in the SCAQMD draft guidance document titled *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* (December 5, 2008) that could be applied by lead agencies. The Working Group has not provided additional guidance since release of the interim guidance in 2008. The SCAQMD Board has not approved the thresholds; however, the guidance document provides substantial evidence supporting the approach to determine significance of GHG emissions that can be considered by the lead agency in adopting its own threshold. The current interim thresholds consist of the following tiered approach:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a GHG reduction plan. If a project is consistent with a qualifying local GHG reduction plan, it does not have significant GHG emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project is less than significant:
 - **Residential and Commercial Land Use:** 3,000 MT CO₂e per year
 - **Based on Land Use Type:** Residential, 3,500 MT CO₂e per year; Commercial, 1,400 MT CO₂e per year; or Mixed-Use, 3,000 MT CO₂e per year
- Tier 4 has the following options:
 - **Option 1:** Reduce BAU emissions by a certain percentage (which is currently undefined)
 - **Option 2:** Early implementation of applicable AB 32 Scoping Plan measures

- **Option 3, 2020 Target for Service Populations¹ (SP):** 4.8 MT CO₂e/SP/year for projects and 6.6 MT CO₂e/SP/year for plans;
- **Option 3, 2035 Target:** 3.0 MT CO₂e/SP/year for projects and 4.1 MT CO₂e/SP/year for plans
- Tier 5 involves mitigation offsets to achieve target significance threshold.

4.8.3.4 Local Regulations

The City of Lake Forest does not have any plans, policies, regulations, significance thresholds, or laws addressing climate change at this time. However, the City of Lake Forest *Local Guidelines for Implementing the California Environmental Quality Act (2017)* contains guidelines for estimating GHG emissions and determining significance for CEQA compliance.

The Recreation and Resources Element of the City of Lake Forest General Plan (2015a) includes goals and policies addressing energy conservation. The General Plan states that energy requirements can be diminished through innovative architectural design, building construction, structural orientation, and landscaping.

The City has established ECONomic, which is a voluntary green home education program. The City, through ECONomic, encourages homeowners and building professionals to incorporate green building design into construction projects. The City also promotes utility company incentive programs to retrofit existing development with energy efficient lighting, air conditioning, and heating systems to reduce energy consumption.

4.8.4 Methodology

Evaluation of impacts related to GHG emissions from the proposed Project included the following:

- Determination of the short-term construction and long-term operational GHG emissions
- Determination of regulatory compliance measures required to reduce GHG emissions
- Comparison of Project-related construction and operational GHG emissions with applicable SCAQMD thresholds (summarized in Section 4.8.5, Thresholds of Significance).

The latest version of the California Emissions Estimator Model™ (CalEEMod™) v2016.3.2, released by the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts on October 17, 2017, was used to determine the GHG emissions from the proposed Project.

GHG emissions from the proposed Project were calculated as the sum of the construction emissions amortized over the life of the project plus the operational GHG emissions. To amortize the construction GHG emission over the life of the Project, SCAQMD recommends calculating the total GHG emissions for the construction activities, dividing it by a 30-year project life, then adding it to the annual GHG emissions during operation. As such, construction GHG emissions were amortized

¹ Service Population is defined as the total residents and employees associated with a project.

over a 30-year period then added to the annual operational GHG emissions to determine the Project-related GHG emissions.

Operational GHG emissions were calculated from the following sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions
- Solid Waste
- Water Supply, Treatment, and Distribution
- On-Site Equipment Emissions

Promulgated regulations that would affect the Project's emissions were accounted for in calculations of the Project's GHG emissions. In particular, the Pavley Standards, Low Carbon Fuel Standards, and Renewable Portfolio Standards will be in effect for the AB 32 target year of 2020, and therefore are accounted for in the Project's emission calculations. Additionally, the calculation of the Project's GHG emissions takes into consideration Regulatory Compliance Measures (RCMs), which are detailed in Section 4.8.8, Regulatory Compliance Measures and Mitigation Measures, and project features incorporated into the project design that reduce GHG emissions by reducing energy, gas, and water use and vehicle emissions. Please refer to the *Nakase Property Greenhouse Gas Analysis* (Urban Crossroads 2019b) for additional details on the GHG modeling methodology and assumptions used to estimate the GHG emissions of the proposed Project.

4.8.5 Thresholds of Significance

4.8.5.1 CEQA Thresholds of Significance

Thresholds for GHG emissions impacts used in this analysis are consistent with Appendix G of the *State CEQA Guidelines* and the City's *CEQA Significance Thresholds Guide* (2009). The proposed Project may be deemed to have a significant impact with respect to GHG emissions if it would:

Threshold 4.8.1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

Threshold 4.8.2: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

None of the thresholds for GHG emissions were scoped out in the Initial Study, which is included in Appendix A. Therefore, all of the thresholds listed above are addressed in the following analysis.

Although the SCAQMD's draft significance criteria discussed above in Section 4.8.3.3, Regional Regulations, have not been adopted, the City has determined that the SCAQMD's project-level efficiency threshold methodology can be used to set an appropriate significance criterion by which to determine whether the project emits a significant amount of GHGs. The Tier 4, Option 3 threshold of 4.8 MT CO₂e/SP/year for the year 2020 is applicable to the proposed Project. However, because the build-out year of the proposed Project is 2025, the Project's GHG threshold for 2025 was

calculated using the same methodology that SCAQMD used to determine the 2020 and 2030 threshold, as described below.

The SCAQMD derived the project-level efficiency target of 4.8 MT CO₂e/SP/year based on the 2020 GHG reduction target for land use of 295,530,000 MT CO₂e/year in the CARB 2008 Scoping Plan divided by the 2020 statewide population and employment estimates of 61,200,412 persons. A GHG threshold for 2030 was calculated using the GHG reduction target in the CARB 2017 Scoping Plan of 40 percent below 2020 levels by 2030, which equates to 2.88 MT CO₂e/SP/year. The GHG threshold for the 2025 build-out year for the proposed Project was calculated by linear interpolation between the 2020 target of 4.8 MT CO₂e/SP/year and the 2030 target of 2.88 MT CO₂e/SP/year, which yields a 2025 target of 3.84 MT CO₂e/SP/year. Based on this methodology, GHG thresholds for the proposed Project are as follows:

- 3.84 MT CO₂e/SP/year for 2025
- 2.88 MT CO₂e/SP/year for 2030

4.8.6 Project Impacts

Threshold 4.8.1: Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Significant Impact. Construction activities associated with the proposed Project would result in emissions of CO₂ and CH₄ from construction activities. Operational activities associated with the proposed Project would result in emissions of CO₂, CH₄, and N₂O from the following sources: Area Source Emissions, Energy Source Emissions, Mobile Source Emissions, Solid Waste, Water Supply, Treatment and Distribution, and On-Site Equipment Emissions. These emissions would contribute to the total GHGs emitted from the Project site.

The proposed Project would be required to comply with several regulations aimed at reducing GHG emissions. As specified in RCM AQ-3 (see Section 4.8.8), the proposed Project is required to comply with SCAQMD Rule 445, which prohibits the use of wood burning stoves and fireplaces in new development. As specified in RCM AQ-4 (see Section 4.8.8), the Project building components (e.g., windows, roof systems, electrical and lighting systems, and heating, ventilation, and air conditioning systems [HVAC]) would be designed in compliance with 2019 CCR Title 24 standards. CCR Title 24 requires projects to implement energy efficiency measures that promote conservation. The 2019 CCR Title 24 standards anticipate 30 percent less energy use for non-residential buildings and 53 percent less energy use for residential use due to lighting upgrades compared to the 2016 standards. As specified in RCM GHG-1 (see Section 4.8.8), appliances installed in the Project buildings would comply with the energy efficiency requirements in CCR Title 20.

In addition to compliance with existing regulations, the Project would include several features aimed at reducing GHG emissions. These features are discussed in Chapter 3.0, Project Description, of this EIR and include:

- Senior housing dwelling units (these tend to have lower levels of auto ownership which in turn decrease vehicle emissions)

- Pedestrian connections between the Nakase Planned Community neighborhoods
- Implementation of a Water Conservation Strategy
- Electric vehicle charging stations and carpool parking spaces for employees at the future school site, and employees and residents at the senior housing site.
- Installation of insulation in walls and attic spaces
- Installation of high-efficiency windows and doors
- Installation of HVAC systems with a high Seasonal Energy Efficiency Ratio (SEER)
- Installation of water-efficient plumbing fixtures
- Installation of tankless water heater systems
- Installation of light-emitting diode (LED) technology within homes
- Use of recycled water for common area landscape irrigation
- Use of drought-tolerant plants in landscape design
- Installation of water-efficient irrigation systems with smart sensor controls
- Stormwater Best Management Practices (BMPs)
- Installation of a 240-volt circuit in each home to allow easy installation of EV charging

GHG emissions for the proposed Project in 2025 and 2030 with compliance with regulatory requirements (RCM AQ-3, RCM AQ-4, and RCM GHG-1) and Project Design Features (PDFs) are summarized in Tables 4.8.B and 4.8.C. As shown in these tables, the proposed Project would result in 4.91 MT CO₂e/SP/year in 2025 and 4.42 MT CO₂e/SP/year in 2025 after implementation of regulatory requirements and PDFs. The total GHG emissions of the proposed Project would exceed the thresholds of 3.84 MT CO₂e/SP/year for 2025 and 2.88 MT CO₂e/SP/year for 2030. Thus, project-related emissions would have a potentially significant impact related to generation of GHG emissions.

No feasible mitigation measures exist that would substantially lessen GHG emissions to levels that are less than significant. More than 73 percent of all mobile-source emissions in 2025 and 66 percent of all mobile-source emissions in 2030 (by weight) would be generated by the proposed Project's mobile sources (traffic). Neither the Project Applicant nor the City can substantively or materially affect reductions in Project mobile-source emissions beyond the regulatory requirements and PDFs included as part of the proposed Project. Additionally, even if mitigation were applied to reduce all other sources of GHG emissions to the maximum extent possible, the proposed Projects mobile-source emissions alone would still exceed the threshold of significance. Therefore, impacts related to generation of GHG emissions would remain significant and unavoidable.

Threshold 4.8.2: Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Significant Impact. The Project's consistency with AB 32 and SB 32 are discussed below.

Table 4.8.B: 2025 Project Greenhouse Gas Emissions

Emissions Source		Emissions (MT/yr)			
		CO ₂	CH ₄	N ₂ O	Total CO ₂ e
Annual construction-related emissions amortized over 30 years		372.21	0.04	0.00	373.19
Area	Other Uses	0.03	7.00E ⁻⁰⁵	0.00	0.03
	Residential	199.42	0.02	3.42E ⁻⁰³	200.84
Energy	Other Uses	128.25	0.01	1.96E ⁻⁰³	129.01
	Residential	1,712.09	0.09	0.03	1,722.16
Mobile	Other Uses	2,042.38	0.08	0.00	2,044.38
	Residential	6,906.23	0.27	0.00	6,912.99
Waste	Other Uses	37.16	2.20	0.00	92.07
	Residential	170.14	10.06	0.00	421.52
Water Usage	Other Uses	29.98	0.07	1.90E ⁻⁰³	32.18
	Residential	170.81	1.33	0.03	213.96
Total CO₂e (All Sources)		12,142.31			
<i>Existing Emissions</i>		<i>-599.10</i>			
Net CO₂e (Project Minus Existing)		11,543			
Project Service Population		2,349			
Total CO₂e/Service Population		4.91			
2025 GHG Service Population Threshold		3.84			
Threshold Exceeded?		YES			

Source: Nakase Property Greenhouse Gas Analysis (Urban Crossroads 2019b).

CH₄ = methane CO₂e = carbon dioxide equivalent MT/yr = metric tons per year
CO₂ = carbon dioxide GHG = greenhouse gas N₂O = nitrous oxide

Table 4.8.C: 2030 Project Greenhouse Gas Emissions

Emissions Source		Emissions (MT/yr)			
		CO ₂	CH ₄	N ₂ O	Total CO ₂ e
Annual construction-related emissions amortized over 30 years		372.21	0.04	0.00	373.19
Area	Other Uses	0.03	7.00E ⁻⁰⁵	0.00	0.03
	Residential	199.42	0.02	3.42E ⁻⁰³	200.84
Energy	Other Uses	115.19	0.01	1.96E ⁻⁰³	115.94
	Residential	1,549.03	0.09	0.03	1,559.10
Mobile	Other Uses	1,822.25	0.07	0.00	1,823.97
	Residential	6,161.18	0.23	0.00	6,167.00
Waste	Other Uses	37.16	2.20	0.00	92.07
	Residential	170.14	10.06	0.00	421.52
Water Usage	Other Uses	25.71	0.07	1.90E ⁻⁰³	27.91
	Residential	147.85	1.33	0.03	191.00
Total CO₂e (All Sources)		10,972.55			
<i>Existing Emissions</i>		<i>-599.10</i>			
Net CO₂e (Project Minus Existing)		10,373			
Project Service Population		2,349			
Total CO₂e/Service Population		4.42			
2030 GHG Service Population Threshold		2.88			
Threshold Exceeded?		YES			

Source: Nakase Property Greenhouse Gas Analysis (Urban Crossroads 2019b).

CH₄ = methane CO₂e = carbon dioxide equivalent MT/yr = metric tons per year
CO₂ = carbon dioxide GHG = greenhouse gas N₂O = nitrous oxide

Assembly Bill 32. The 2008 CARB Scoping Plan identifies strategies to reduce California’s GHG emissions in support of AB 32, which requires the State to reduce its GHG emissions to 1990 levels by 2020. Measures that are applicable and supported by the Project (e.g., energy efficiency) are summarized in Table 4.8.D. Many of the strategies identified in the CARB Scoping Plan are not applicable at the project level (e.g., long-term technological improvements to reduce emissions from vehicles) and are therefore not listed in Table 4.8.D. While some of the measures are not directly applicable, the Project would not conflict with their implementation (refer to Table 3-5 of the *Nakase Property Greenhouse Gas Analysis* [Urban Crossroads 2019b] for additional discussion of the measures that are not applicable to the Project). The Project would not conflict with any of the provisions of the CARB Scoping Plan and in fact would support six of the action categories contained in the Scoping Plan through energy efficiency, water conservation, recycling, and landscaping, as detailed in Table 4.8.D.

Table 4.8.D: Scoping Plan Consistency Summary

Action Category	Supporting Measures	Consistency
Energy Efficiency	E-1: Building, Appliance, and Utility Energy Efficiency Standards and Programs (Electricity) E-2: Combined Heat and Power (CHP) Systems CR-1: Building, Appliance, and Utility Energy Efficiency Standards and Programs (Natural Gas) CR-2: Solar Water Heating (CSI Thermal Program)	Consistent. The project will include a variety of building, water, and solid waste efficiencies consistent with 2016 CALGreen requirements.
Million Solar Roofs (MSR) Program	E-4: Senate Bill 1 Million Solar Roofs (California Solar Initiative, New Solar Home Partnership, Public Utility Programs) and earlier solar programs.	Consistent. The MSR program sets a goal for use of solar systems throughout the State as a whole. The Project’s roof structures will be designed to support solar panels.
Green Building Strategy	GB-1: Green Building Standards	Consistent. The project will include a variety of building, water, and solid waste efficiencies consistent with 2016 CALGreen requirements.
Recycling and Waste	RW-1: Landfill Methane Control RW-2: Increasing the Efficiency of Landfill Methane Capture RW-3: Mandatory Commercial Recycling	Consistent. The project will be required to recycle a minimum of 50 percent of waste from construction and operational activities per the California Integrated Waste Management Act of 1989 (AB 939).
Sustainable Forests	F-1: Sustainable Forest Target	Consistent. The project will increase carbon sequestration by increasing on-site trees per the project landscaping plan.
Water	W-1: Water Use Efficiency W-2: Water Recycling W-3: Water System Energy Efficiency W-4: Reuse Urban Runoff W-5: Renewable Energy Production W-6: Water Public Goods Charge	Consistent. The project will include use of low-flow fixtures and efficient landscaping per State requirements.

Source: *Nakase Property Greenhouse Gas Analysis* (Urban Crossroads 2019b).

CALGreen = California Green Building Standards Code

City = City of Lake Forest

Senate Bill 32. At the State level, EO S-3-05 and EO B-30-15 are orders from the State’s Executive Branch for the purpose of reducing GHG emissions. The goal of EO S-3-05 is to reduce GHG emissions to 1990 levels by 2020 and was codified by the Legislature as the 2006 Global Warming Solutions Act (AB 32). As discussed above, the proposed Project is consistent with AB 32. Therefore, the proposed Project does not conflict with this component of EO S-3-05. The Executive Orders also establish goals to reduce GHG emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. However, studies have shown that, in order to meet the 2030 and 2050 targets, aggressive technologies in the transportation and energy sectors, including electrification and the decarbonization of fuel, would be required. In its Climate Change Scoping Plan, CARB acknowledged that the “measures needed to meet the 2050 target are too far in the future to define in detail.” In the First Scoping Plan Update, however, CARB generally described the type of activities required to achieve the 2050 target: “energy demand reduction through efficiency and activity changes; large scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and rapid market penetration of efficiency and clean energy technologies that requires significant efforts to deploy and scale markets for the cleanest technologies immediately.”

Unlike the 2020 and 2030 reduction targets of AB 32 and SB 32, respectively, the 2050 target of EO S-3-05 has not been codified. Accordingly, the 2050 reduction target has not been the subject of any analysis by the CARB. For example, the CARB has not prepared an update to the aforementioned Scoping Plan that provides guidance to local agencies as to how they may contribute to the achievement of the 2050 reduction target.

In 2017, the California Supreme Court examined the need to use the EO S-3-05 2050 reduction target in *Cleveland National Forest Foundation v. San Diego Association of Governments* (2017) 3 Cal.5th 497 (Cleveland National). The case arose from the San Diego Association of Governments (SANDAG) adoption of its 2050 RTP, which included its Sustainable Communities Strategy (SCS), as required by SB 375 (discussed above). On review, the Supreme Court held that SANDAG did not violate CEQA by not considering the EO S-3-05 2050 reduction target.

Further, the proposed Project is much smaller in size and scope in comparison to the RTP examined in Cleveland National. Accordingly, there is no information presently available to assess the proposed Project’s consistency with regard to the 2050 target of EO S-3-05.

The 2017 CARB Scoping Plan builds on the 2008 Scoping Plan to achieve the 40 percent reduction from 1990 levels by 2030. The proposed Project would be consistent with the following major elements of the 2017 Scoping Plan framework for achieving the GHG reductions:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing the number of zero emission vehicle (ZEV) buses and trucks. When adopted, this measure would apply to all buses accessing the Project site.

- Low Carbon Fuel Standard, with an increased stringency (18 percent by 2030). When adopted, this measure would apply to all fuel purchased in the State and used by residents of the proposed Project.
- Implementing SB 350, which expands the Renewables Portfolio Standard (RPS) to 50 percent RPS and doubles energy efficiency savings by 2030. When adopted, this measure would apply when electricity is provided to the proposed Project by a utility company.
- Implementing the proposed Short-Lived Climate Pollutant Strategy (SLPS), which focuses on reducing CH₄ and HFC emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030. When adopted, the proposed Project would be required to comply with this measure and reduce SLPS accordingly if it were to emit any CH₄ or HFC emissions during any on-site activities.
- 20 percent reduction in GHG emissions from refineries by 2030. The proposed Project would be required to comply with this measure if it were to utilize any fuel from refineries.

The remaining major elements of the 2017 CARB Scoping Plan framework are not applicable to the proposed Project; however, the Project would not conflict with implementation of these elements (refer to Section 3.9 of the *Nakase Property Greenhouse Gas Analysis* [Urban Crossroads 2019b] for additional discussion of the Scoping Plan elements that are not applicable to the Project).

As discussed above, the Project would not conflict with any of the 2017 Scoping Plan elements. Notwithstanding, because the Project exceeds the applicable service population GHG thresholds and consequently has the potential to result in a cumulatively considerable impact with respect to GHG emissions, a significant and unavoidable impact would occur related to conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. As discussed previously, there is no available mitigation to substantially lessen this significant impact. Therefore, impacts related to conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions would remain significant and unavoidable.

4.8.7 Level of Significance Prior to Mitigation

Impacts related to the generation of GHG emissions and conflict with an applicable GHG reduction plan, policy, or regulation are considered significant and unavoidable.

4.8.8 Regulatory Compliance Measures and Mitigation Measures

The following RCMs are SCAQMD rules that are applicable to the proposed Project and are considered in the analysis of potential impacts related to GHG emissions. The City considers these requirements to be mandatory; therefore, they are not mitigation measures.

- RCM AQ-3:** **South Coast Air Quality Management District (SCAQMD) Rule 445.** Prior to the issuance of building permits, the City of Lake Forest Director of Community Development, or designee, shall ensure that the project design does not include wood-burning stoves and fireplaces in new development in compliance with SCAQMD Rule 445.
- RCM AQ-4:** **Title 24 of the California Code of Regulations (CCR).** Prior to issuance of building permits, the City of Lake Forest Director of Community Development, or designee, shall ensure that the project design complies with the 2019 Building Energy Efficiency Standards (CCR Title 24) energy conservation and the California Green Building Standards Code (CALGreen).
- RCM GHG-1:** **Title 20 of the California Code of Regulations (CCR).** Appliances installed in a project building will comply with the energy efficiency requirements in CCR Title 20, Appliance Energy Efficiency Standards. All appliances shall be Energy Star appliances.

Even with compliance with the regulatory requirements listed above, impacts related to GHG emissions would be significant. However, there are no feasible mitigation measures to further reduce impacts related to GHG emissions.

4.8.9 Level of Significance after Mitigation

There is no feasible mitigation available to substantially lessen the significant impacts related to generation of GHG emissions and conflict with an applicable GHG reduction plan, policy, or regulation. Therefore, impacts related to GHG emissions would remain significant and unavoidable.

4.8.10 Cumulative Impacts

Project-related GHG emissions are not confined to a particular air basin but are dispersed worldwide. Hence, GHG impacts are by nature a cumulative impact. Consequently, it is speculative to determine how an individual project's GHG emissions would impact California. Therefore, impacts identified under Threshold 4.8.1 are not project-specific impacts to GCC, but are the proposed Project's contribution to this cumulative impact. Because the Project's GHG emissions were considered significant and unavoidable, the Project's GHG emissions and contribution to GCC impacts are considered cumulatively considerable and therefore significant and unavoidable. There is no feasible mitigation available to substantially lessen these cumulatively significant GHG emission impacts.