4.7 Greenhouse Gases

This section identifies the environmental setting, regulatory context, and the potential of the proposed Project to result in impacts related to greenhouse gas (GHG) emissions. The analysis is based on Project GHG emissions estimates calculated using the California Emissions Estimator Model (CalEEMod) provided in Appendix C of this Draft Environmental Impact Report (Draft EIR).

4.7.1 Existing Site Conditions

A GHG is any gas that absorbs infrared radiation in the atmosphere. This absorption traps heat within the atmosphere, altering the Earth's surface temperature. Increased surface temperatures caused by increased absorption of the sun's infrared radiation from GHGs is commonly referred to as the greenhouse gas effect. GHG emissions resulting from human activities have increased levels of most naturally occurring GHGs in the atmosphere and the continued release of these GHGs will result in an increase in the temperature of the Earth's lower atmosphere. This increase in atmospheric temperature from increased GHGs is a phenomenon commonly referred to as global warming. Warming of the Earth's lower atmosphere induces a suite of additional changes, including changes in global precipitation patterns; ocean circulation, temperature, and acidity; global mean sea level; species distribution and diversity; and the timing of biological processes. These large-scale changes are collectively referred to as global climate change.

The GHGs listed by the Intergovernmental Panel on Climate Change (IPCC) include carbon dioxide (CO_2), hydrofluorocarbons, methane, nitrous oxide, perfluorocarbons, nitrogen trifluoride, chlorofluorocarbons, hydrochlorofluorocarbons bromofluorocarbons, and sulfur hexafluoride (Intergovernmental Panel on Climate Change 2007). California law and the State CEQA Guidelines contain a similar definition of GHGs (Health and Safety Code Section 38505(g); 14 CCR Section 15364.5).

The Global Warming Potential (GWP) was developed to simplify quantification, reporting, analysis, and comparison of the global warming impacts of different GHGs. IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO_2 equivalents (CO_2e). The GWP of CO_2 is, by definition, 1. GHG emissions are quantified and presented in terms of metric tons (MT) of CO_2e emitted per year.

4.7.2 Related Policies and Regulations

Federal Regulations

The Federal Clean Air Act

The Federal Clean Air Act (FCAA) enables the United States Environmental Protection Agency (EPA) to regulate key GHG emissions sources (mobile emissions), establish mandatory

emissions reporting for large stationary emitters, and implement vehicle fuel efficiency standards. The GHG emissions regulations work in conjunction with the EPA's other mandated goals to reach and maintain acceptable air quality levels throughout California's air basins as discussed in Section 4.2 *Air Quality*.

State Regulations

California has a long history of enacting legislation and implementing programs that reduce GHGs by way of statewide building energy efficiency requirements, electric utility renewable portfolio standards, and clean fuel and car standards. With the 2006 passage of Assembly Bill (AB) 32, the California Global Warming Solutions Act, California embarked on its first direct efforts to establish and implement GHG reduction goals and regulations.

Since the passage of AB 32, the State has enacted numerous strategies consistent with and parallel to AB 32 to further the reduction of air pollution and GHG emissions though more restrictive clean fuel/standards and building energy efficiency requirements, as well as numerous vehicle miles traveled (VMT) reduction strategies. These VMT reduction strategies include promoting alternative modes of transportation (i.e., transit, carpool, rideshare, bike, pedestrian) and promoting land use strategies enabling the creation of sustainable communities through proper residential location and density near transit and fostering mixed- and multi-use land use development projects. The most notable land use regulation is Senate Bill 375 – California's Sustainable Communities and Climate Protection Act of 2008 – that supports the State's GHG reduction goals by coordinating transportation and land use planning.

Assembly Bill 32 – California Global Warming Solutions Act

The passage of AB 32 in 2006, the California Global Warming Solutions Act, started California's first direct efforts to control greenhouse gas emissions. AB 32 required overall GHG emissions in California be reduced to their 1990 levels by 2020. Pursuant to AB 32, the California Air Resources Board (CARB) was directed to develop a Scoping Plan and adopt regulations to achieve this goal by implementing maximum technologically feasible and cost-effective GHG emission reductions. (CARB, 2020b). The Scoping Plan was first approved in 2008, was updated in 2013, then again in 2017. The 2017 Scoping Plan update identified how the State can reach the current 2030 target of reducing GHG emissions by 40 percent from 1990 levels and advancing toward the 2050 goal to reduce GHG emissions by 80 percent below 1990 levels.

Senate Bill 375 – California's Regional Transportation and Land Use Planning Efforts

Under the Sustainable Communities and Climate Protection Act of 2008, referred to as Senate Bill 375, CARB sets regional targets for GHG emissions reductions from automobiles and light trucks. Each of California's metropolitan planning organizations (MPOs) must prepare a "Sustainable Communities Strategy" (SCS) as part of its regional transportation plan (RTP) to meet reduction targets using regional land use and transportation policies.

Regional Regulations

Southern California Association of Governments - Sustainable Communities Strategy

The Southern California Association of Governments (SCAG) is the MPO for the southern California region. SCAG approved the first RTP/SCS in 2012, followed by an update to the RTP/SCS in 2016, and approved the most current plan in 2020 known as Connect SoCal. The Connect SoCal is a long-range visioning plan that builds upon and expands land use and transportation strategies established over prior planning cycles to increase mobility options and achieve a more sustainable growth pattern. Connect SoCal notes the 2020 goal of per capita automobile and light duty truck GHG emission reductions relative to 2005 levels of eight percent was achieved, and projects a 19 percent reduction in 2035, thereby meeting the GHG reduction targets established by the California Air Resources Board (ARB) for the SCAG region.

Local Regulations

There are no local regulations directly related to GHGs or climate change that apply to the proposed Project. However, the City evaluates a project's level of significance based on the City's CEQA Manual as described in *Methodology* below.

4.7.3 Thresholds of Significance

Criteria for determining the significance of impacts related to GHGs are based on criteria contained in Appendix G of the State CEQA Guidelines and the City's CEQA Manual. The proposed Project could have a significant impact on the environment if it would result in any of the following.

Threshold GHG-1 *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

Threshold GHG-2 *Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

Methodology

The California Emissions Estimate Model (CalEEMod, version 2020.4.0) was used to quantify GHG emissions during Project construction and operation. Consistent with SCAQMD guidance, construction-period emissions were amortized over a 30-year period and added to the operational emissions to obtain annual GHG emissions.

The City's CEQA Manual establishes the process for analyzing GHG emissions from proposed projects. As presented in the Manual, the City has adopted the interim GHG emissions thresholds established in 2008 by the South Coast Air Quality Management District (SCAQMD) Working Group formed to identify GHG emissions thresholds for land use projects that could be used by local lead agencies in the South Coast Air Basin (SCAB). The five-tiered approach for analyzing

GHG impacts from development projects recommended by the Working Group and adopted by the City include:

- 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 MTCO2e/yr
    - Industrial land use: 10,000 MTCO2e/yr
    - Based on land use type: residential: 3,500 MTCO2e/yr; commercial: 1,400 MTCO2e/yr; or mixed use: 3,000 MTCO2e/yr
- Tier 4 has the following options:
    - Option 1: Reduce Business-as-Usual (BAU) emissions by a certain percentage (this percentage is currently undefined)
    - Option 2: Early implementation of applicable AB 32 Scoping Plan measures
    - Option 3: 2020 target for service populations (SP), which includes residents and employees: 4.8 MTC2e per SP per year for projects and 6.6 MTCO2e per SP per year for plans;
    - Option 4: 2035 target of 3.0 MTCO2e per SP per year for projects and 4.1 MTCO2e per SP per year for plans
- Tier 5 involves mitigation offsets to achieve target significance threshold.

Consistent with Tier 3, the City has set a value of 3,000 $MTCO_2e$/year as the screening threshold for small, simple projects. Projects that generate GHG emissions of 3,000 $MTCO_2e$/year or less are considered to generated a less than significant quantity of GHGs in accordance with Tier 3.

4.7.4 Project Design Features and Standard Conditions of Approval

SCA GHG-1 The Project would adhere to existing, applicable, CALGreen building code standards as they relate to reducing Project operational energy use, indirectly reducing GHG emissions and impacts.

4.7.5 Environmental Impact Evaluation

Threshold GHG-1 *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

Less Than Significant Impact. As noted previously, GHG emissions for the proposed Project were calculated using CalEEMod. Project GHG emissions are summarized in Table 4.7-1.

Table 4.7-1. Project Greenhouse Gas Emissions

Emission Source	Emissions (MT/yr)			
	CO_2	**CH_4**	**N_2O**	**Total CO_2e**
Annual construction-related emissions amortized over 30 years	7.89	<0.01	<0.01	7.94
Area Source	0.37	<0.01	<0.01	0.37
Energy Source	47.48	<0.01	<0.01	47.71
Mobile Source	177.66	0.01	0.00	177.93
Water	7.48	0.04	<0.01	9.01
Total CO_2e (All Sources)	**313.25**			

MT/yr = metric tons per year
Source: (Enplaners, February 2022)

As shown in Table 4.7-1, the Project is estimated to generate 313.25 $MTCO_2e$/year of GHGs. As noted previously, the City's established significance threshold of 3,000 $MTCO_2e$/year for small, simple projects. The proposed Project's GHG emissions of 313.25 $MTCO_2e$/year is less than the threshold. Project GHG impacts are therefore less than significant.

Threshold GHG-2 *Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

Less Than Significant Impact. The City has not adopted a qualified GHG reduction plan or climate action plan. Projects in local jurisdictions without such a plan are generally considered consistent with applicable GHG reduction plans, policies, and regulations if it is consistent with applicable policies contained in the current version of SCAG's RTP/SCS and impacts are considered less than significant.

As discussed in Section 4.2, *Air Quality*, the proposed Project was determined to be consistent the current air quality management plan (AQMP). Determination of AQMP consistency was based on the Project's consistency with underlying land use assumptions for the Project site provided by the City, used in the growth projections developed by SCAG and in turn used by South Coast Air

Quality Management District (SCAQMD) in development of its AQMP. The proposed Project's land use designation and zoning classifications are consistent with the LNGP and therefore also consistent with the applicable land use assumptions developed by SCAG.

According to SCAG, The Connect SoCal plan (2020-2045 RTP/SCS adopted in September 2020) represents the vision for Southern California's future, including policies, strategies, and projects for advancing the region's mobility, economy, and sustainability through 2040. The plan details how the region will address its transportation and land use challenges and opportunities in order to achieve its regional emissions standards and greenhouse gas (GHG) reduction targets. However, the Connect SoCal Plan does not require that local general plans, specific plans, or zoning be consistent with the SCS. The proposed Project is a multi-family residential development and one of its objectives is to provide amenities unique to housing in Laguna Niguel. For example, the Project floor plans are intended to accommodate work from home occupants, and each unit contains an oversized garage space providing residents adequate area for in-home exercise and recreation equipment. As a result, the Project amenities and floor plans accommodating a work from home environment provides more options for residents to live and work locally ultimately reducing Project VMT, thereby reducing transportation related GHG emissions. Furthermore, as seen in Section 4.12, *Transportation*, projects generating less than 500 vehicle trips per day are presumed to have a less than significant CEQA transportation impact and are screened out from requiring a detailed VMT Analysis. Due to the proposed Project generating less than 161 daily trips per day, the proposed Project is considered to be a small project and its CEQA transportation impacts associated with VMT are presumed to be less than significant. Therefore, the Project is consistent with the objectives of the Connect SoCal Plan and would not interfere with SCAG's ability to implement the regional strategies outlined in the Connect SoCal.

The Project would not conflict with the Connect SoCal Plan adopted to achieve numerous goals including reducing the emissions of GHGs, and the Project's GHG emissions were determined to be less than significant. Consequently, impacts from conflicts with applicable GHG reduction plans, policies, or regulations would be less than significant, and no mitigation is required.

4.7.6 Cumulative Impacts

Less than Significant Impact. As discussed above under Threshold GHG-1, there is no evidence to indicate the GHG emissions from the proposed Project would result in a significant impact directly or indirectly. Project impacts due to GHG emissions are inherently cumulative in nature, because the collective effect of GHGs in the atmosphere from past, present, and future projects is the focus of GHG reduction strategies.

As discussed under the analysis of Threshold GHG-2, the Project would be consistent with the RTP/SCS. For this reason, it was determined the Project would not conflict with applicable GHG reduction plans, policies, or regulations.

As such, the Project would result in a less-than-cumulatively-considerable impact from GHG emissions as well as from conflicts with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

4.7.7 Summary of Mitigation Measures

As described above, there are no significant impacts associated with GHG emissions or conflicts with applicable GHG reduction plans, policies, or regulations, and no mitigation measures are required.

4.7.8 Significant Environmental Impacts

The analysis above indicates the Project will not exceed significance criteria for GHG impacts on a project-specific and cumulative basis. Therefore, GHG impacts are **less than significant**, and no mitigation measures are required.

4.7.9 References

14 CCR 15000–15387 and Appendix A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

California Air Resources Board (ARB). 2009. *ARB Fact Sheet: Air Pollution and Health.* http://www.arb.ca.gov/research/health/fs/fs1/fs1.htm, (Accessed June 20, 2021).

City of Laguna Niguel. February 2022. City of Laguna Niguel CEQA Manual.

City of Laguna Niguel. 1992. General Plan for the City of Laguna Niguel. Available: http://cityoflagunaniguel.org/DocumentCenter/Home/View/1886. (Accessed: August 11, 2021.)

City of Laguna Niguel, Laguna Niguel Municipal Code Title 9, Planning and Zoning. https://library.municode.com/ca/laguna_niguel/codes/code_of_ordinances?nodeId=TIT9PLZO (Accessed June 20, 2021).

Enplanners. October 2021. CalEEMod Air Pollution Emissions Calculations.

South Coast Air Quality Management District (SCAQMD). 2017. CEQA Air Quality Handbook website: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook, (Accessed June 20, 2021).

United States Environmental Protection Agency (EPA). *Air Quality Data.* https://www.epa.gov/outdoor-air-quality-data, (Accessed June 20, 2021).

This page left intentionally blank.