

5.6 Greenhouse Gas Emissions

This section analyzes the potential air quality impacts related to greenhouse gas (GHG) emissions associated with the Proposed Project in terms of short-term (construction) impacts and long-term (operational) impacts. The existing setting has been detailed in Section 5.2, Air Quality, and is summarized in this section. Information in this section is based on the “Air Quality and Greenhouse Gas Emissions Impact Analysis” (Air Quality Analysis) prepared by Giroux & Associates (Giroux) dated July 2013. The complete Air Quality Analysis, including appendices, is included herein as Appendix C. [The July 2013 report was supplemented by a Greenhouse Gas Mitigation Assessment for Esperanza Hills prepared by Fred Greve, P.E. of Greve & Associates, LLC dated September 2016, which is attached as Appendix V.](#)

5.6.1 Existing Setting

1. Climate

The Project Site is located in the South Coast Air Basin (SCAB). The Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean and high mountains. The climate in the SCAB is determined by its terrain and geographical location and is dominated by the strength and position of the semi-permanent high pressure center over the Pacific Ocean near Hawaii.

a. Temperature

The average temperature varies little throughout the SCAB, averaging 62°F. High temperatures in the Project Area average 75°F during the summer and 65.5°F during the winter. Low temperatures average 62.2°F during summer nights and 48.6°F during winter nights.

b. Winds

Winds in the vicinity display several characteristics. Summer daytime winds are generally from the south in the morning and the west in the afternoon. The warm air

Acronyms used in this section:

AAQS	Ambient Air Quality Standards
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
BAU	business as usual
CAAA	Clean Air Act Amendments
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CO	carbon monoxide
EPA	Environmental Protection Agency
GHG	greenhouse gas
NO _x	nitrogen oxides
RCM	reasonable control measure
ROG	reactive organic gases
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District

during spring and early summer lifts most of the pollution produced on an average day and moves it through the mountain passes. Late summer and winter months see a less pronounced flushing effect due to the lower wind speeds and early off-shore winds. Pollutants are trapped in the valleys of the region due to this stagnation.

Adequate daytime ventilation speed typically does not allow for stagnation of air pollutants in the Project Area. Moderate onshore breezes carry locally generated emissions eastward toward Chino Hills or across northern Orange County and up Santa Ana or Carbon Canyons towards western San Bernardino and Riverside counties. Daytime air quality problems occur when winds shift into the northwest and the sea breeze is replaced by airflow across substantial pollution generation areas of southwestern Los Angeles County. Occasional unhealthy smog levels near the Project Site during the summer and early fall are the result of slower nighttime winds drifting seaward across the air basin, allowing for stagnation of pollution. However, during the night the density of vehicular sources in the upwind area is generally low enough to minimize any major air pollution problems. The Air Quality Analysis determined that air pollution episodes, if any, are due mainly to pollutants transported into the area rather than any locally generated emissions.

c. Temperature Inversions

Temperature inversions result when the daytime onshore flow of marine air is capped by a dome of warm air that acts like a lid over the basin. As the ocean air moves inland, pollutants are continually added from below without any dilution from above. This layer slows down in inland valleys and undergoes photochemical transformations due to sunlight, creating unhealthy levels of smog (ozone). Ozone typically occurs in high concentrations in late spring, summer, and early fall when light winds, low mixing height, and increased sunlight combine, resulting in ozone production. Smog effects are less significant when there is no inversion layer or when winds average 15 miles per hour or greater.

Nighttime inversions, especially during the winter, form as cool air pools in low elevations while the upper air remains warm. Shallow radiation inversions are formed that trap pollutants near intensive traffic sources such as freeways, forming localized effects called “hot spots.”

Pollutants generated by stationary and mobile sources mix with less contaminated air beneath the inversion layer and will become more concentrated unless the inversion breaks down. When strong inversions are formed on cool winter nights, carbon monoxide (CO) generated by automobile exhaust becomes concentrated. Generally, the highest levels of CO are produced during the months of November through February.

2. Baseline Air Quality

The SCAQMD Anaheim monitoring station, which is the nearest station to the Proposed Project, was used to determine existing and probable future levels of air quality in the Project Area. The station measures regional pollution levels (smog) and primary vehicular pollution levels near busy roadways (carbon monoxide, nitrogen oxides). Pollutants such as PM₁₀ and PM_{2.5} are also monitored. A 6-year air quality monitoring summary (2006-2011) is found in Table 5-6-1 below. The Project Site is vacant land that currently contributes minimally to impacts from greenhouse gas emissions. The Air Quality Analysis provides the following conclusions regarding air quality/greenhouse gas emissions trends based on the table.

- Photochemical smog (ozone) levels occasionally exceed standards. The 1-hour state standard and the 8-hour state and federal ozone standard have been exceeded an average of 1% of all days in the past 6 years. Years 2009, 2010 and 2011 demonstrate progressively improved ozone levels in the area. While ozone levels are still high, they are much lower than 10 to 20 years ago.
- Respirable dust (PM₁₀) levels occasionally exceed the state standard on approximately 6% of measured days. As with ozone, the frequency of violations has noticeably decreased in 2009-2011. The less stringent federal PM₁₀ standard was violated once in 2007 during a wildfire event.
- The federal ultra-fine particulate (PM_{2.5}) standard of 35 µg/m³ has been exceeded about 2% of measurement days in the last 6 years. Similarly, 2009-2011 have been the “cleanest” years on record.
- More localized pollutants, such as carbon monoxide, ~~etc.~~ and nitrogen oxides, are very low near the Project Site. These pollutants can be naturally dispersed to reduce localized vehicular air pollutants such as NO_x or CO without any threat of violating applicable AAQS.

While complete attainment of every standard is not imminent, the steady improvement trend suggests that such attainment could occur within the reasonably near future.

Table 5-6-1 Air Quality Monitoring Summary (2006-2011)

Pollutant/Standard	Number of Days Standards Were Exceeded and Maximum Levels During Such Violations (Entries shown as ratios = samples exceeding standard/samples taken)					
	2006	2007	2008	2009	2010	2011
Ozone						
1-hour > 0.09 ppm (S)	6	2	2	0	1	0
8-hour > 0.07 ppm (S)	5	7	10	2	1	1
8-hour > 0.075 ppm (F)	3	1	5	1	1	0
Max. 1-hour concentration (ppm)	0.113	0.127	0.105	0.093	0.104	0.088
Max. 8-hour concentration (ppm)	0.089	0.100	0.086	0.077	0.088	0.072
Carbon Monoxide						
1-hour > 20. ppm (S)	0	0	0	0	0	0
8-hour > 9. ppm (S,F)	0	0	0	0	0	0
Max 1-hour concentration (ppm)	4.5	3.6	4.1	3.2	3.0	2.7
Max 8-hour concentration (ppm)	2.9	2.9	3.4	2.7	2.0	2.1
Nitrogen Dioxide						
1-hour > 0.18 ppm (S)	0	0	0	0	0	0
Max. 1-hour concentration (ppm)	0.114	0.086	0.093	0.068	0.073	0.074
Inhalable Particulates (PM₁₀)						
24-hour > 50 µg/m ³ (S)	7/55	6/59	3/58	1/56	0/57	2/57
24-hour > 150 µg/m ³ (F)	0/55	1/59	0/58	0/56	0/57	0/57
Max. 24-hour concentration (µg/m ³)	103.	488.*	61.	62.	43.	53.
Ultra-Fine Particulates (PM_{2.5})						
24-hour > 35 µg/m ³ (F)	7/314	14/336	5/304	4/334	0/331	2/365
Max. 24-hour concentration (µg/m ³)	56.2	79.4	67.8	64.5	31.7	39.2

*wildfire event

S=state standard; F=federal standard

Source: South Coast Air Quality Management District, Anaheim Station (3176)

5.6.2 Regulatory Setting

The SCAQMD and the California Air Resources Board (CARB) are the principal agencies charged with managing air quality within the SCAB. The SCAQMD establishes and enforces regulations for stationary (non-mobile) sources of air pollution within the SCAB. The CARB is responsible for controlling motor vehicle emissions, establishing legal emissions rates for new vehicles, and the vehicle inspection program. In addition to the current regulatory status relating to GHG emissions, this section provides a brief summary of the regulatory setting for other principal pollutants. Detailed discussion of these pollutants is found in Section 5.2, Air Quality (beginning on page 5-65).

1. Greenhouse Gas Emissions (GHG)

Greenhouse gases (GHG) are so called because of their role in trapping heat near the surface of the earth. GHG are created by human activities and are implicated in global climate change, commonly referred to as global warming. The principal GHGs are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. Title 14, Chapter 3, §15364.5 of the *California Code of Regulations* defines GHGs to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur

hexafluoride. Fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions at about one-fourth of total emissions.

State of California Assembly Bill 32 (AB 32) (Division 25.5 of the *Health and Safety Code*, §38500, et seq.), known as the Global Warming Solutions Act, was passed in August 2006. AB 32 requires that levels of GHG be reduced to 1990 levels by the year 2020. Senate Bill 97 (SB 97) requires that the Governor's Office of Planning and Research develop guidelines for CEQA compliance related to GHG emissions, including mitigation measures for the reduction of GHG.

AB 32 is the state bill requiring that levels of GHG be reduced to 1990 levels by the year 2020 and is one of the most significant pieces of environmental legislation that California has adopted. The bill will have wide-ranging effects on California businesses and lifestyles as well as far reaching effects on other states and countries. A unique aspect of AB 32, beyond its broad and wide-ranging mandatory provisions and dramatic GHG reductions, are the short timeframes within which ~~is it~~ must be implemented. Major components include:

- ~~Require~~Requires the monitoring and reporting of GHG emissions beginning with sources or categories of sources that contribute the most to statewide emissions.
- Requires immediate "early action" control programs on the most readily controlled GHG sources.
- Mandates that by 2020, California's GHG emissions be reduced to 1990 levels.
- Forces an overall reduction of GHG gases in California by 25-40% from business as usual, to be achieved by 2020.
- Must complement efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

Section 15064.4 of the CEQA Guidelines provides that emissions identification may be quantitative, qualitative or based on performance standards. CEQA guidelines allow the selection of the model or methodology the lead agency considers most appropriate. Use of a computer model such as CalEEMod is the most common practice for emissions quantification to determine the significance of the emissions. The threshold of significance must take into consideration what level of GHG emissions would be cumulatively considerable. The guidelines are clear that ~~they do not support~~ a zero net emissions threshold. ~~is not required.~~ A lead agency may rely on thresholds adopted by ~~an~~ another agency with greater expertise if ~~it does~~ the lead agency has not ~~have sufficient expertise in evaluating the impacts yet formally adopted its own significance threshold.~~

California has passed several bills and the Governor has signed at least ~~three~~four executive orders regarding GHG. GHG statutes and executive orders (EO) include AB

32, SB 1368 (Chapter 596, Statutes of 2000), EO S-03-05, EO S-20-06, [EO S-01-07](#) and EO ~~S-01-07~~[B-30-15](#). Statewide, the framework for developing the implementing regulations for AB 32 is under way. Maximum GHG reductions are expected to derive from increased vehicle fuel efficiency, from greater use of renewable energy and increased structural energy efficiency. [CARB's Scoping Plan \(2008\) and First Update \(May 2014\) provide a framework for actions to reduce California's GHG emissions and require CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area source emissions \(e.g., energy usage, high-global warming potential GHGs in consumer products\) and changes to the vehicle fleet \(hybrid, electric, and more fuel-efficient vehicles\) and associated fuels \(e.g., Low Carbon Fuel Standard\), among others.](#) Additionally, through the California Climate Action Reserve, general and industry-specific protocols for assessing and reporting GHG emissions have been developed. The California Climate Action Reserve is a program of the Climate Action Reserve committed to solving climate change through emissions ~~and~~ accounting and reduction. GHG sources are categorized into direct sources (i.e. company owned) and indirect sources (i.e., not company owned). Direct sources include combustion emissions from on- and off-road mobile sources and fugitive emissions. Fugitive emissions are defined as gases or vapors emitted from pressurized equipment due to leaks and other unintended or irregular releases of gases, generally from industrial activities. Indirect sources include off-site electricity generation and non-company owned mobile sources.

2. Ambient Air Quality Standards (AAQS)

To gauge the significance of the air quality impacts of the Proposed Project, those impacts, together with existing background air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare of those people most susceptible to further respiratory distress. This group, called “sensitive receptors,” includes asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. National Ambient Air Quality Standards (AAQS) were established in 1971 for six pollution species with states retaining the option to add other pollutants, require more stringent compliance, or include different exposure periods. The federal Clean Air Act Amendments of 1990 required that the EPA review all national AAQS in light of known health effects. The EPA was charged with modifying existing standards or promulgating new standards where appropriate. EPA subsequently developed standards for chronic ozone exposure (8+ hours per day) and for very-small-diameter particulate matter (PM_{2.5}). New national AAQS were adopted on July 17, 1997.

Because the State of California had established AAQS several years before the federal action, and because of unique air quality problems introduced by the restrictive dispersion meteorology, there is a considerable difference between state and national

clean air standards. Table 5-2-2, Health Effects of Major Criteria Pollutants (Section 5.2 - Air Quality) describes the health effects of the major criteria pollutants and lists sources and primary effects for each.

3. Federal Clean Air Act Amendments

The Federal Clean Air Act Amendments (CAAA) of 1990 required that the EPA review all national AAQS in light of currently known health effects, including modifying existing standards or promulgating new standards where appropriate. EPA subsequently developed standards for chronic ozone exposure (8+ hours per day) and for very small diameter particulate matter (PM_{2.5}). New national AAQS were adopted in 1997 for these pollutants. Additional details regarding the CAAA can be found in Section 5.2, Air Quality (beginning on page 5-65).

In response to continuing evidence that ozone exposure at levels just meeting federal clean air standards is demonstrably unhealthful, EPA proposed a further strengthening of the 8-hour standard. Draft standards were published in 2010 with an 8-hour standard of 0.065 ppm. Environmental organizations generally approved of the proposal; however, most manufacturing, transportation, or power generation groups opposed the new standard as economically unwise in an uncertain fiscal climate. In recognition of the fact that a stronger ozone standard could adversely impact employment, the draft proposal was placed on indefinite hold. EPA did propose and adopt a revised annual PM_{2.5} standard that may require a revision to the basin-wide fine particulate attainment plan. The Clean Air Act defines “non-attainment” as a locality where air pollution levels persistently exceed national AAQS.

4. California Air Resources Board

In 2005, CARB extensively evaluated health effects of ozone exposure and adopted a new state standard for an 8-hour ozone exposure which aligned with the federal 8-hour standard. The state 8-hour standard of 0.07 parts per million (ppm) is more stringent than the federal standards of 0.075 ppm. As with the PM_{2.5} standard, there is no specific attainment deadline. State jurisdictions are required to make progress towards attaining state standards, but there are no consequences of non-attainment. At the same time, CARB adopted an annual state standard for nitrogen dioxide (NO₂) which is more stringent than the federal standard.

A new federal one-hour standard for NO₂ was adopted in 2010 that is more stringent than the existing state standard. Based on air quality monitoring data in the SCAB, the CARB has requested the EPA to designate the basin as “in attainment” for this standard. The federal standard for sulfur dioxide (SO₂) was also recently revised. However, with minimal combustion of coal and mandatory use of low sulfur fuels in California, SO₂ is typically not a problem pollutant.

5. Air Quality Management Plan

The federal Clean Air Act Amendments of 1977 required that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan demonstrating the steps that would bring the area into compliance. The SCAB was unable to meet deadlines for ozone, nitrogen dioxide, carbon monoxide, or PM₁₀. The agencies designated by the Governor to develop regional air quality plans within the SCAB are the SCAQMD and the Southern California Association of Governments (SCAG). The first Air Quality Management Plan (Plan) was adopted by these agencies in 1979. However, attainment forecasts were overly optimistic and the Plan was revised several times.

The Federal Clean Air Act Amendments of 1990 required that all states with air-sheds with “serious” or worse ozone problems submit a revision to the State Implementation Plan (SIP). Over the past decade, revisions and amendments to the SIP have been approved. The most current attainment emissions forecast for ozone precursors – i.e., reactive organic gases (ROG) and nitrogen oxides (NO_x) and for carbon monoxide (CO) and particulate matter are shown in Table 5-6-2 below. Substantial reductions of ROG, NO_x and CO are forecast to continue throughout the next several decades. PM₁₀ and PM_{2.5} are forecast to slightly increase unless new particulate control programs are implemented.

Table 5-6-2 South Coast Air Basin Emissions Forecasts

Pollutant	Emissions in Tons per Day			
	2008 ^a	2010 ^b	2015 ^b	2020 ^b
NO _x	917	836	667	561
ROG	632	596	545	525
CO	3,344	3,039	2,556	2,281
PM ₁₀	308	314	328	340
PM _{2.5}	110	110	111	113

^a 2008 base year

^b With current emissions reduction programs and adopted growth forecasts.

Source: California Air Resources Board, California Emissions Projection Analysis Model, 2009

In 2003, the AQMD adopted an updated AQMP, which was approved by the EPA in 2004. The AQMP outlined the air pollution measures needed to meet federal health-based standards for ozone by 2010 and for particulates by 2006. The AQMP was based on the federal one-hour ozone standard, which was revoked late in 2005 and replaced by an 8-hour federal standard, which action initiated a new air quality planning cycle. [The 2012 AQMP was adopted by the SCAQMD Governing Board on December 7, 2012.](#)

Re-designation of the air basin as non-attainment for the 8-hour ozone standards resulted in a new attainment plan being developed. The plan shifted most of the one-hour ozone standard attainment strategies to the 8-hour standard. The attainment date was changed from 2010 to 2021.

Because projected attainment by 2021 requires control technologies that do not yet exist, the SCAQMD requested a voluntary “bump-up” from a “severe non-attainment” area to an “extreme non-attainment” designation for ozone, allowing a longer time for the technologies to develop. Without attainment, EPA would have been required to impose sanctions on the region if the bump-up had not been approved. In April 2010, EPA approved the change in designation to “extreme,” thus setting a later attainment deadline. This reclassification also requires the air basin to adopt even more stringent emissions controls.

6. SB 375 and SCAG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)

As noted in the 2012-2035 RTP/SCS, the Southern California Association of Governments (SCAG) has prepared Regional Transportation Plans (RTPs) with the primary goal of increasing mobility for the region’s residents and visitors. The RTP/SCS vision encompasses three principles that collectively work as the key to the region’s future: mobility, economy, and sustainability. Senate Bill (SB) 375 calls for the RTP/SCS to include a goal that reduces GHG emissions from passenger vehicles by 8% per capita by 2020 and 13% per capita by 2035 compared to 2005, as set by CARB. SB 375 enhances the State’s goals of AB 32. The future GHG reductions promised by the RTP/SCS were sent to CARB for approval and incorporation into CARB’s ongoing planning for compliance with California’s GHG reduction goals.¹ CARB staff evaluated the key performance indicators supporting SCAG’s determination, and concluded that SCAG’s SCS, if implemented, would meet the GHG targets that CARB established for the region for 2020 and 2035. (*Id.* at 2.) Therefore, CARB accepted SCAG’s quantification of GHG emission reductions from the SCS.

The 2012-2035 RTP/SCS (page 4) states that: “To address these challenges, SCAG performed a careful analysis of our transportation system, the future growth of our region, and potential new sources of revenue, and embarked on a massive outreach undertaking to hear what the region had to say. While SCAG continued to work closely through hundreds of meetings with stakeholder agencies with which it has always collaborated, it also conducted a series of planning sessions throughout the region to find out what Southern Californians want to see in their future. The result of this multi-year effort is the 2012–2035 RTP/SCS, a shared vision for the region’s sustainable future.”²

Specifically, the 2012-2035 SCS demonstrates the region’s ability to attain and exceed the GHG emission-reduction targets set forth by the ARB by outlining a plan for integrating the transportation network and related strategies with an overall land use

¹ CARB, Executive Order G-12-039 (“ARB Acceptance of GHG Quantification Determination”) (June 2012), available at http://www.arb.ca.gov/cc/sb375/exec_order_scag_scs.pdf

² <http://rtpscs.scag.ca.gov/Documents/2012/final/f2012RTPSCS.pdf>

pattern that responds to projected growth, housing needs, changing demographics, and transportation demands. The SCS focuses the majority of new housing and job growth in high-quality transit areas and other opportunity areas in existing main streets, downtowns, and commercial corridors, resulting in an improved jobs-housing balance and more opportunity for transit-oriented development. As noted in the SCS, “This overall land use development pattern supports and complements the proposed transportation network that emphasizes system preservation, active transportation, and transportation demand management measures.”

In April 2016, SCAG adopted the 2016-2040 RTP/SCS. As noted on page 65 of the updated RTP/SCS, “This Plan’s goals are intended to help carry out our vision for improved mobility, a strong economy and sustainability. Based on our assessment of these developments, the goals of the 2016 RTP/SCS, which are represented graphically in this chapter, remain unchanged from those adopted in the 2012 RTP/SCS.”

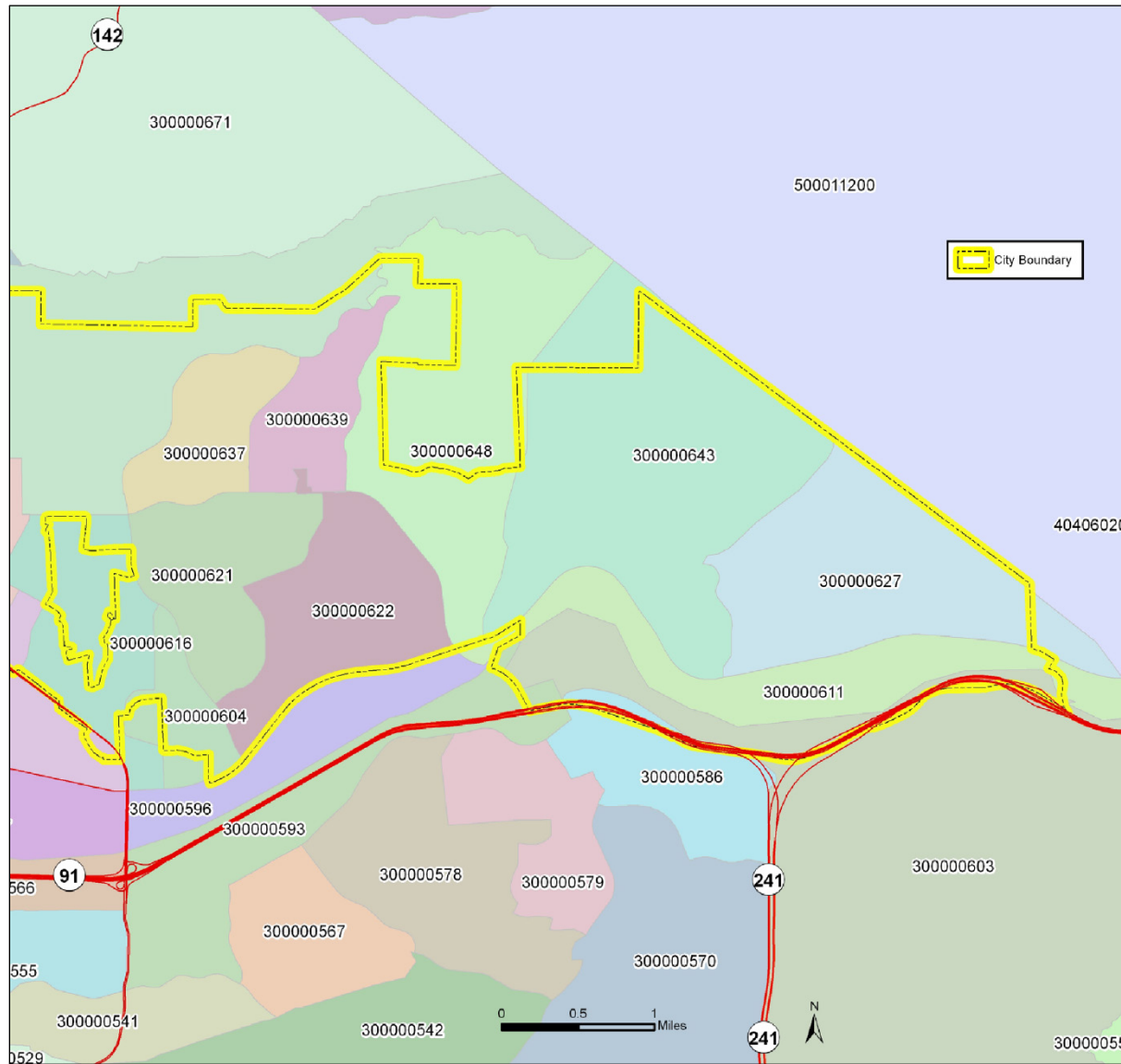
The update, on page 70, states:

Furthermore, the preferred scenario offers a vision for how we want our region to grow over the next quarter century and it gives us a clear-eyed view of what we want to achieve. Guided by goals and policies, built through analysis and refined with extensive public input, developing the preferred scenario set the stage for the hard work of building a comprehensive plan of land use and transportation strategies, programs and projects designed to confront our many challenges and move our region toward the vision embodied in the preferred scenario.

The 2016 RTP/SCS takes into account the population, households, and employment projected for 2040, and therefore the largest demand on the transportation system expected during the lifetime of the plan. In accounting for the effects of regional population growth, the model output provides a regional, long-term and cumulative level of analysis for the impacts of the 2016 RTP/SCS on transportation resources.³

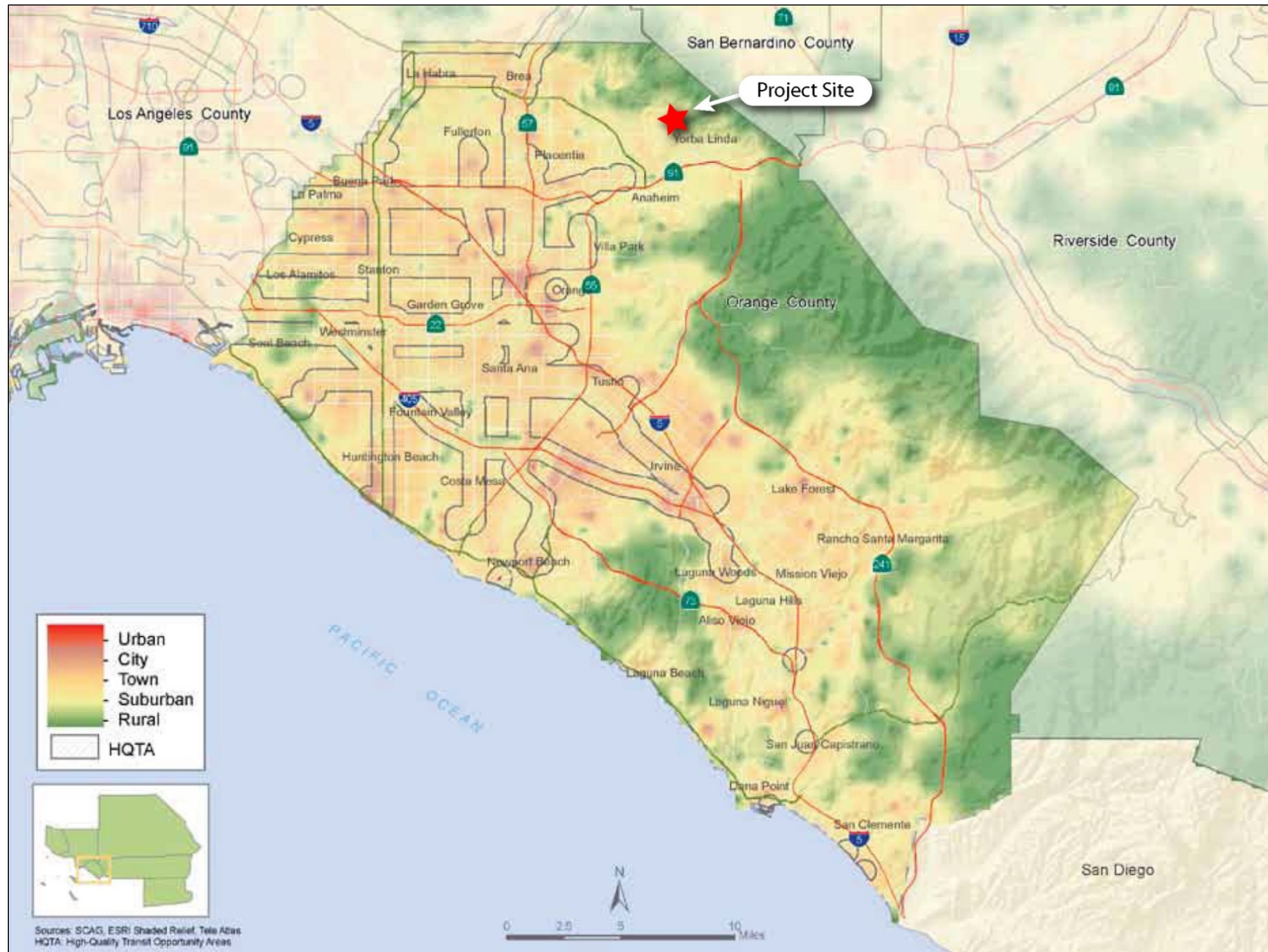
The modeling analysis underlying the RTP/SCS is based on SCAG’s growth forecast data for population and housing by areas divided into “transportation analysis zones” (TAZ). The household and employment projections for the Proposed Project and its immediate surrounding area located in unincorporated Orange County are contained in TAZ 300000648 as shown on Exhibit 5-24 – Transportation Analysis Zones in the City of Yorba Linda (Portion). The Project Site is located in the Suburban designation (Exhibit 4.17 - 2012-2035 RTP/SCS) and included herein as Exhibit 5-25). The RTP/SCS notes: “Suburban areas contain a mix of uses, but often have one predominant use such as residential or office. Residential areas are typically low density with larger lots and are separated from retail and other daily service uses.”

³ 2016-2040 RTP/SCS, page 123



Source: SCAG, 2008 (http://webapp.scag.ca.gov/scsmaps/Maps/Orange%20County/subregion/OCCOG/Yorba%20Linda/image/Yorba_Linda_TAZ.jpg)

Exhibit 5-24 – Transportation Analysis Zones in the City of Yorba Linda (Portion)



[Exhibit 5-25 – Land Use Patterns, Orange County \(2035\)](#)

5.6.3 Thresholds of Significance

The California Resources Agency developed guidelines for the treatment of GHG emissions under CEQA in response to requirements of SB 97. The new guidelines became state laws under Title 14 of the *California Code of Regulations* in March 2010. The CEQA Appendix G Guidelines for air quality state that a project would have a potentially significant impact if it:

- a) Generates GHG emissions, directly or indirectly, that may have a significant impact on the environment, or,
- b) Conflicts with an applicable plan, policy or regulation adopted to reduce GHG emissions.

California Code of Regulations §15064.4 specifies how significance of GHG emissions is to be evaluated, even though guidelines have not been adopted. The process is broken down into quantification of project-related GHG emissions, making a determination of significance and specification of any appropriate mitigation if impacts are found to be potentially significant. The lead agency is afforded substantial flexibility at each of these steps.

On December 5, 2008, the SCAQMD governing board adopted an Interim Quantitative GHG Significance Threshold for industrial projects where the SCAQMD is the lead agency (e.g., stationary source permit projects, rules, plans) of 10,000 metric tons (MT) ~~CO₂~~CO_{2e} equivalent ~~per~~ year. In September 2010, the Working Group released revisions which recommended a threshold of 3,500 MT CO_{2e} for residential projects. This 3,500 MT CO_{2e} per year recommendation was used as a guideline for the Proposed Project Air Quality Analysis. However, because the recommendations included a threshold of 3,000 MT ~~CO₂~~CO_{2e} for mixed use projects, the more ~~restrictive~~conservative threshold is used here. Some jurisdictions have adopted a numerical annual GHG emissions level as a CEQA threshold of significance. Others, such as the County of Orange, have taken the numerical threshold to be an indicator level that signals a requirement for incorporating reasonable and feasible enhanced “green” building practices without formal adoption of an absolute significance standard.

As detailed in Section 5.2, Air Quality (beginning on page 5-65), air quality impacts can be categorized as primary or secondary. Primary pollutant impacts can generally be evaluated directly in comparison to appropriate clean air standards. Violations of these standards where they are currently met, or a measurable worsening of an existing or future violation, would be considered a significant impact.

Secondary pollutants, by comparison, require time to transform from a more benign form to a more unhealthful contaminant. The impact occurs regionally far from the source. Analysis of significance of such emissions is based on a specified amount of emissions (e.g., pounds, tons) even though there is no way to translate those emissions directly into a corresponding ambient air quality impact.

The SCAQMD has established significance thresholds based on Section 182(e) of the federal Clean Air Act that identify levels of volatile organic compounds from stationary sources operating in extreme non-attainment regions for ozone at 10 tons per year. These established values were converted into threshold levels of pounds per day for the construction and operational phases of a project. The SCAQMD states that any project located in the SCAB having daily emissions from direct and indirect sources that exceed the emissions thresholds should be considered significant.

Table 5-6-3 below depicts threshold levels for direct construction emissions and indirect operations emissions. Impacts related to these pollutants are further discussed in Section 5.2, Air Quality (beginning on page 5-65).

Table 5-6-3 Daily Emissions Thresholds

Pollutant	Construction	Operations
ROG	75	55
NO _x	100	55
CO	550	550
PM ₁₀	150	150
PM _{2.5}	55	55
SO _x	150	150
Lead	3	3

Source: SCAQMD CEQA Air Quality Handbook, November, 1993 Rev.

Sensitive Receptors

The Air Quality Analysis combined the existing background air quality levels and potential impacts from the Proposed Project and then compared the results to the applicable air quality standards. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare, particularly for those people most susceptible to further respiratory distress. These population groups include asthmatics, the elderly, very young children, people already weakened by other disease or illness and persons engaged in strenuous work or exercise and are called, collectively, sensitive receptors. Healthy adults can generally tolerate occasional exposure to air pollutant levels considerably above the minimum standards before adverse effects result. However, recent research has shown that chronic exposure to ozone (the primary ingredient in photochemical smog) may lead to adverse respiratory health even at concentrations close to the ambient standard.

A health risk assessment was prepared by Giroux Associates to determine risks to sensitive receptors from construction emissions. An analysis of this assessment is included in Section 5.2, Air Quality (beginning on page 5-65).

5.6.4 Project Impacts Prior to Mitigation

Local air quality impacts/emissions are usually divided into short-term and long-term impacts. Short-term impacts are normally the result of demolition, construction, or grading operations. Long-term impacts are associated with the built-out condition of the Proposed Project and are the result of day-to-day operation and maintenance, use of consumer products, natural gas use, and vehicle trips associated with residents, visitors, and employees.

1. Baseline Project Scenario

The CalEEMod computer model was used to calculate construction emissions and operational emissions. The Baseline Project Scenario Emission Calculation consists of unmitigated project emissions reflecting only rules adopted as of 2006, which is the assumption under the AB 32 scoping plan⁴ and the CAPCOA Quantification Report dated August 2010, which selected a baseline period to correspond to average GHG emissions from 2002 to 2004 inclusive.⁵ The Esperanza Hills Specific Plan has design features included and required, such as low water use and Energy Star construction and appliances, but those design features were not incorporated as part of the baseline calculation for the CalEEMod runs.

2. Construction GHG Emissions

Table 5-6-4 below shows CalEEMod's default equipment fleet with the addition of several scrapers and a grader to the grading phase to ensure an accurate and conservative analysis: with regard to construction emissions. Activity duration estimates were provided by the Project Applicant. CalEEMod defaults are included in the Appendix C of the Air Quality Analysis (Appendix C to this DEIR). The CalEEMod construction model demonstrated the unmitigated and mitigated emissions for an assumed 7-year construction scenario. This information is further detailed in Section 5.2, Air Quality (beginning on page 5-65).

Table 5-6-4 CalEEMod Equipment Fleet

<u>Clearing (120 days)</u>	<u>4 tractors/loaders/backhoes, 3 dozers</u>
<u>Grading (260 days)</u>	<u>2 excavators, 1 dozer, 2 graders, 6 scrapers, 2 tractors/loaders/backhoes</u>
<u>Construction (1,000 days)</u>	<u>1 crane, 3 forklifts, 1 generator set, 3 tractors/loaders/backhoes, 1 welder</u>
<u>Paving (120 days)</u>	<u>2 pavers, 2 paving equipment, 2 rollers</u>

Using While it is unlikely that all equipment will be in use at the same time, due to construction phasing, using the equipment fleet indicated above as a worst case

⁴ Source: SCAQMD GHG meeting November 14, 2009; example scenario no. 1

⁵ Source: CAPCOA Quantifying Greenhouse Gas Mitigation Measures, August 2010, page 25

scenario ~~required~~ resulted in significant disturbance of soil requiring dust control mitigation measures, ~~which have been~~. Therefore, Mitigation Measures AQ-1, AQ-2 and AQ-3 were included in the Air Quality Chapter 5.2 herein, and these same mitigation ~~section herein~~. However, it is unlikely that all equipment will be in use at the same time measures will also reduce GHG emissions during construction. The mitigation measures applied to construction equipment for the “with mitigation” scenario include the best available construction management practices. GHG construction emissions were considered and mitigation was included in Section 5.2, Air Quality. The construction emissions impact, with mitigation, is considered less than significant. However, GHG impacts due to construction as detailed in Table 5-6-5 below have been considered separately and also included in the GHG emissions analysis under operational impacts.

~~The CalEEMod construction model demonstrated the unmitigated and mitigated emissions for an assumed eight year construction scenario. This information is further detailed in Section 5.2, Air Quality (beginning on page 5-65).~~

~~2.1. Construction GHG Emissions~~

~~The CalEEMod, which was~~ used to determine construction activity GHG emissions, amortizes estimated construction emissions over a 6- to 7-year timespan. The SCAQMD GHG emissions policy is to amortize emissions over a 30-year lifetime. As noted in the SCAQMD CEQA Handbook synopsis for GHG emissions: For the purposes of determining whether or not GHG emissions from affected projects are significant, project emissions will include direct, indirect, and, to the extent information is available, life cycle emissions during construction and operation. Construction emissions will be amortized over the life of the project, defined as 30 years, added to the operational emissions, and compared to the applicable interim GHG significance threshold tier.⁶ Table 5-6-5 below identifies the projected construction emissions for the Option 1 and Option 2 alternatives, (DEIR Section 5.2 – Air Quality), including the amortized level for both under the more conservative 7-year timespan used by CalEEMod. Option 1 grading emissions are the largest and, therefore, represent the worst case scenario. If emissions from Option 1 do not exceed SCAQMD construction emissions thresholds, the other development options—As shown would also meet thresholds. As noted above, GHG impacts from construction as amortized are considered individually less-than-significant.

⁶ [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2)

Table 5-6-5 Construction Emissions

Option 1	Metric Tons CO₂(e) per Year
Phase 1	
Year 2015	1,165.0
Year 2016	536.5
Year 2017	525.1
Year 2018	284.4
Phase 2	
Year 2018-9	469.7
Year 2019	424.0
Year 2020	15.7
Overall Total	3,420.4
Amortized	114.0

*CalEEMod Output provided in appendix [to Air Quality and Greenhouse Gas Emissions Impact Analysis dated April 14, 2014]

	Metric Tons CO₂(e)	
	Option 1	Option 2
Year 2014	1,557.3	1,525.5
Year 2015	1,501.9	1,470.9
Year 2016	613.0	613.0
Year 2017	607.5	607.5
Year 2018	606.9	606.9
Year 2019	604.2	604.2
Year 2020	490.1	490.1
Overall Total	6,005.2	5,942.4
Amortized	200.2	198.1

*CalEEMod Output provided in appendix [to Air Quality and Greenhouse Gas Emissions Impact Analysis dated July 12, 2013]

3. Operational GHG Emissions

Project operational emissions for the Baseline Project Scenario were analyzed using the CalEEMod model ~~for 340 units in the analysis prepared by Greve & Associates dated August 2016.~~ The ~~GHG conversion from consumption to annual regional CO₂(e)~~ previous operational emissions in the model output files included analyzed by Giroux & Associates assumed a build-out for 378 units, and therefore, the estimated operational emissions have declined from the estimates provided by Giroux & Associates due to the reduction in Appendix C: the unit count. Total operational and ~~annualized~~ construction emissions are depicted in Table 5-6-6 below.

Table 5-6-6 Proposed [Project](#) Residential Operational Emissions - [Unmitigated](#)

Consumption Source	CO₂(e) tons/year MT Tons CO₂e per Year*
Area sources	256.2 87.9
Energy utilization	1,572.1 1219.7
Mobile source	4,535.7 279.4
Solid waste generation	201.6 181.3
Water consumption	166.2 154.9
Amortized construction emissions	198.6 114.0
Total	6,930.4 37.2

[*Greenhouse Gas Mitigation Assessment prepared by Greve & Associates dated August 2016](#)

As shown, total ~~project~~[Project](#) GHG emissions [of 6,037.2 MT CO₂e per year](#) are substantially above the proposed significance threshold of 3,000 MT [CO₂e per year](#) and are, therefore, considered significant ~~–~~ [and require mitigation.](#)

4. Consistency with GHG Plans and Policies

Consistency with GHG plans and policies is typically evaluated relative to AB 32 requirements. A reduction in statewide GHG emissions of 28.9% compared to business-as-usual (BAU) conditions has been established as a goal of AB 32. [AB 32 takes into account the relative contribution of each source or source category to prevent adverse impacts on small businesses and others by requiring CARB to recommend a de minimus threshold of GHG emissions below which emissions reduction requirements would not apply. AB 32 also allows the Governor to adjust the deadlines for individual regulations or the entire state to the earliest feasible date in the event of extraordinary circumstances, catastrophic events or threat of significant economic harm. In addition to AB 32 additional existing state regulations include the following, among others. It should be noted that not all regulations apply to residential development but are applicable as statewide measures to reduce GHG emissions.](#)

- [Sustainable Communities and Climate Protection Act \(SB 375\)](#)
- [Executive Orders S-03-05 and B-30-15 \(Greenhouse Gas Emission Reduction Targets\)](#)
- [California Mandatory Commercial Recycling Law \(AB 341\)](#)
- [Pavley Fuel Efficiency Standards \(AB 1493\)](#)
- [California Integrated Waste Management Act of 1989 \(AB 939\)](#)
- [Title 24 California Code of Regulations, Part 6 \(Building and Energy Efficiency Standards\)](#)
- [Title 24 California Code of Regulations, Part 11 \(Appliance Energy Efficiency Standards\)](#)
- [Title 17 California Code of Regulations \(Low Carbon Fuel Standard\)](#)
- [California Water Conservation in Landscaping Act of 2006 \(AB 1881\)](#)

In preparing the Air Quality [and Greenhouse Gas](#) Analysis for the Proposed Project, BAU conditions were conservatively presumed to continue throughout the lifetime of the ~~project~~[Project](#). However, a number of statewide programs are in place to achieve GHG emissions reductions that will attain a very substantial fraction of the AB 32 goal, creating a 5% shortfall: [to be mitigated by measures specific to the Project](#). As shown in Table 5-6-7 below, SCAQMD has estimated that the adopted low carbon fuel standard, the enhanced renewable portfolio standard, and required enhanced energy efficiencies will combine to achieve 23.9% of the 28.9% goal. ~~Assuming the remaining 5% reductions can be achieved by local initiatives, the Proposed Project would not interfere with timely implementation of AB 32.~~

Table 5-6-7 GHG Emissions Reductions from State Regulations

Category	Source	Percent of Category	Percent of State Total
Mobile	AB 1493	19.7%	8.9%
	LCFS Low Carbon Fuel Standard - auto	7.2%	3.2%
	LCFS Low Carbon Fuel Standard - medium	7.2%	0.4%
	Truck efficiency	2.9%	0.2%
	Passenger efficiency	2.8%	1.3%
Area	Res. Residential Energy Efficiency (gas)	9.5%	1.0%
	Non- Res. Residential Energy Efficiency (gas)	9.5%	1.0%
Indirect	RPS Renewable Portfolio Standard	21.0%	3.5%
	Energy efficiency (else electricity)	15.7%	4.0%
	Solar roofs	1.5%	0.2%
Total			23.9%

~~LCFS = low carbon fuel standard~~

~~RPS = renewable portfolio standard~~

Totals may not sum due to rounding.

Source: http://www.aqmd.gov/ceqa/handbook/SCAQMD_GHG/2009/nov19mtg/ghgmtg14.pdf [CEQA Significance Threshold Stakeholder Working Group](#)

~~If it can be demonstrated that more than adequate options exist to attain the local mitigation responsibility of 5%, mitigation would not be considered to be deferred even if the development plan is not yet finalized. In the absence of an adopted Orange County Climate Action Plan (CAP), reasonable and feasible mitigation measures have been evaluated to achieve the 5% reduction as an interim measure to be taken prior to any CAP adoption. Therefore, mitigation aimed at achieving a 5% reduction in GHG emissions is included herein.~~

~~The California Air Pollution Control Officers Association (CAPCOA) has developed candidate GHG reduction programs to supplement the statewide AB 32 compliance program. CAPCOA's "CEQA and Climate Change" (2010) is one of the most detailed and annotated mitigation plans outlined. This plan was applied to the preliminary Esperanza Hills GHG mitigation plan because it is so comprehensive and because it quantifies the potential measure effectiveness in great detail.~~

~~Five general categories of emissions reduction potential were evaluated, including transportation control measures, energy conservation enhancement, water supply, solid waste generation, and miscellaneous measures. Table 5-6-8 below presents a~~

detailed breakdown of the general measures and levels of emissions reduction potential that CAPCOA considers feasible on a project-level basis. In presenting the potential effectiveness, the CAPCOA document presents a percent range of documented results. The low end of the effectiveness range is presented. This is considered appropriate because the implementation of multiple programs simultaneously tends to result in duplicated efforts, which reduces the effectiveness of each measure. For example, while some measures may achieve a 3% to 5% capture rate independently, they may not achieve maximum efficiency when a larger array of “green” options is employed. In addition, because the Proposed Project is residential, measures applicable to commercial uses are not considered.

Table 5-6-8 — Design Control Measures and Potential Effectiveness

Measures	Effectiveness
Transportation control measures	
Bus shelters for future transit	1.0%
Pedestrian access and paths through parking areas	1.0%
Voluntary Rideshare w/ Incentives	1.0%
Preferential Parking for EVs and Hybrids	1.0%
Electric vehicle charge stations	1.0%
Total (transportation)	5.0%
Energy Efficiency	
Energy Star and Cool Roofs	0.5%
On-site solar panels on flat roofs	2.0%
Exceed Title 24 requirements by 10%	3.0%
Solar orientation of buildings	0.5%
Low energy cooling	0.5%
Energy Star appliances	0.5%
“Green Building” materials	0.25%
Shading mechanisms	0.25%
High efficiency lighting systems	0.5%
Total energy conservation	8.0%
Water Supply	
Use Reclaimed Water	0.5%
Low Flow Fixtures	0.5%
Water Efficient Landscape	5.0%
Total	6.0%
Solid Waste	
Enhanced Recycling/Recovery Programs	10.0%
Reuse Cut-and-Fill	10.0%
Total	20.0%
Miscellaneous Measures	
Electric lawnmowers	Benefits not quantified
Enhanced recycling, reduction and reuse	
LEED certification	
Drought resistant landscaping	
Local farmer's markets	

Source: CAPCOA (2008), Chapter 7

Table 5-6-9 below summarizes the GHG reductions attainable with the application of reasonable control measures (RCM). Reductions will be provided through Specific

~~Plan Development Guidelines, which include drought-tolerant landscaping and nine community parks to reduce travel to other area parks. As noted herein, the Proposed Project shall incorporate project design features to reduce operational emissions, including use of Energy Star appliances, high-efficiency lighting, low-flow fixtures, Energy Star and Cool roofs, and gas fireplaces instead of wood-burning fireplaces. The table below shows projected GHG reductions overall and for project-specific conditions.~~

Table 5-6-9 — GHG Reductions Attainable with Implementation of Reasonable Control Measures

Category	Applies To	Overall Effectiveness ^a	Overall Percent Reduction ^b	Annual Metric Tons Reduced	Proposed Project RCMs
Transportation control	Transportation	5.0%	3.3%	227	NA
Water supply	Water use	6.0%	0.1%	10	5.5%
Solid waste	Solid waste	20.0%	0.6%	40	NA
Energy efficiency	Electric and natural gas	8.0%	1.8%	126	4.5
Miscellaneous	All	unknown	unknown	NA	NA
Total			5.8%	403	10%

^a percentage reduction within a given source category

^b effectiveness within a given source category times the source category share of the total burden

~~The Proposed Project has incorporated all design features feasible to reduce impacts. Even without reductions from the categories of transportation and solid waste, with feasible options and realistic expectations of effectiveness, mitigation levels exceeding the local goal of 5% can be demonstrated in the categories of water supply and energy efficiency. As shown in the last column of Table 5-6-9 above, the Proposed Project, with implementation of recommended RCMs, can achieve a 10% reduction in GHG emissions. Achievement of this emissions reduction goal would require the implementation of mitigation measures proposed herein, as well as incorporation of identified design features. With available options, project compliance with AB 32 goals and policies can be assured with a reasonable margin of safety.~~

The County of Orange does not have an Air Quality Element to its General Plan at this time nor does it have an Air Management or Greenhouse Gas control plan. Like many cities and counties, Orange County relies on the state to develop appropriate policies and plans.

Based on the annual GHG emissions for Project construction and operation, the 23.9% reduction identified in Table 5-6-7 from statewide GHG regulations, results in a 1,442.9 MT CO₂e reduction. This 23.9% reduction from statewide GHG regulations will reduce the Project's GHG emissions from 6,037.2 MT CO₂e to 4,594.3 MT CO₂e which exceeds the GHG significance threshold of 3,000 MT CO₂e and will require mitigation as further detailed in Section 5.6.5, Mitigation Measures below.

Recent studies show that the state's existing and proposed regulatory framework will allow the state to reduce its GHG emissions level to 40% below 1990 levels by 2030, and to 80% below 1990 levels by 2050. Even though these studies did not provide an

exact regulatory and technological roadmap to achieve the 2030 and 2050 goals, they demonstrated that various combinations of policies could allow the statewide emissions level to remain very low through 2050, suggesting that the combination of new technologies and other regulations not analyzed in the study could allow the State to meet the 2030 and 2050 targets.⁷ The California Air Resources Board, California Energy Commission, California Public Utilities Commission, and the California Independent System Operator engaged E3 (Energy and Environmental Economics) to evaluate the feasibility and cost of a range of potential 2030 targets along the way to the state's goal of reducing GHG emissions to 80% below 1990 levels by 2050. With input from the agencies, E3 developed scenarios that explore the potential pace at which emission reductions can be achieved as well as the mix of technologies and practices deployed. E3 conducted the analysis using its California PATHWAYS model. Enhanced specifically for this study, the model encompasses the entire California economy with detailed representations of the buildings, industry, transportation, and electricity sectors. In addition, Senate Bill 350, which was passed by the Legislature on September 11, 2015, requires the State to double energy efficiency saving in electricity and natural gas by retail customers by 2030 and increases the Renewable Portfolio Standard so that half of the state's electricity must be procured by renewable sources by 2030.

Consistency with state and local plans and policies is determined through the implementation of mitigation measures and strategies that are project specific to provide the maximum GHG emissions reduction. The Proposed Project will result in short-term construction and long-term operational GHG emissions and requires mitigation and regulatory adherence consistent with and applicable to the residential development proposed. Not all categories of legislative regulations such as AB 32 apply to all projects; however, implementation of mitigation measures herein, as applicable, will result in Project consistency with state and local plans, policies and regulations.

5. SB 375 and RTP/SCS Consistency

Neither the 2012 RTP/SCS nor the 2016 RTP/SCS were intended to provide Project-specific mitigation measures. As stated in the 2012 RTP/SCS at page 77: "SCAG's mitigation is consistent with the general role played by a Metropolitan Planning Organization (MPO) including developing and sharing information, collaborating with partners, and developing regional policies. SCAG works with member agencies and stakeholders but does not implement projects or project-specific mitigation." Similarly, the 2016 RTP/SCS stated, at page 115: "SCAG's mitigation is consistent with the general role played by a Metropolitan Planning Organization, including developing and sharing information, collaborating with partners and developing regional policies. SCAG works with member agencies and stakeholders but it does not identify, evaluate or implement projects or project-specific mitigation."

⁷ See Energy and Environmental Economics (E3), "Summary of the California State Agencies' PATHWAYS Project: Long-term Greenhouse Gas Reduction Scenarios" (April 2015); Greenblatt, Jeffrey, Energy Policy, "Modeling California Impacts on Greenhouse Gas Emissions" (Vol. 78, pp. 158-172)

Instead, the RTP/SCS achieves its goals through its plan for land use, transportation, funding, and capital improvements on a regional basis. As noted in the 2016 RTP/SCS at page 8: “It is through integrated planning for land use and transportation that the SCAG region, through the initiatives discussed in this section, will strive toward a more sustainable region. The SCAG region must achieve specific federal air quality standards. It also is required by state law to lower regional greenhouse gas emissions. California law requires the region to reduce per capita greenhouse gas emissions in the SCAG region by eight percent by 2020 – compared with 2005 levels – and by 13% by 2035. The strategies, programs and projects outlined in the 2016 RTP/SCS are projected to result in greenhouse gas emissions reductions in the SCAG region that meet or exceed these targets.”

Finally, as stated at page 70 of the April 2016 RTP/SCS, “For the purpose of determining consistency for California Environmental Quality Act (CEQA), lead agencies such as local jurisdictions have the sole discretion in determining a local project’s consistency with the 2016 RTP/SCS.”

Therefore, consistency with the RTP/SCS is determined by analyzing the projections for the specific TAZ for the Project area, which was utilized to conduct the required modeling analyses for the RTP/SCS, although the 2016 RTP/SCS noted, at page 70, that: “TAZ level data may be used by jurisdictions in local planning as it deems appropriate. There is no obligation by a jurisdiction to change its land use policies, General Plan, or regulations to be consistent with the 2016 RTP/SCS.”

As noted above, the proposed Project is located in TAZ number 300000648. Immediately adjacent TAZ numbers in the City of Yorba Linda are 300000622, 300000639 and 300000643. Because the Project site could potentially be annexed into the City of Yorba Linda in the future, information related to the City is included herein. Section 5.11, Population and Housing, also discusses projections for population and housing generally. The tables below depict the number of households and employment for the TAZ areas associated with the Project based on the RTP/SCS 2012-2035 Growth Forecast and the updated 2016-2040 Growth Forecast. Since the Project is suburban residential, with no retail or service commercial included, employment will be generated short-term by housing construction and long-term by service related jobs required by individual homeowners such as landscaping, home repairs and housekeeping. Table 5-6-8 below identifies the TAZ projections for household and employment in years 2012 and 2035.⁸ The 2012-2035 projections and goals were analyzed in the FEIR Chapter 5, Section 5.9 - Land Use and Planning to determine Project consistency. The Project was deemed consistent with all applicable RTP/SCS goals. SCAG updated the RTP/SCS and the 2016-2040 version was approved in April 2016. As noted in Section 5.6.2, subheading 6, the basic goals identified in 2012-2035 were applied to the 2016-2040 RTP/SCS. Table 5-6-9 identifies the TAZ projection for household and employment for years 2016-2040 and confirms

⁸ Email communication with Ying Zhou, SCAG Headquarters, Orange, CA, July 2016

continuing Project consistency with the goals and projections of the previous and current RTP/SCS.

Table 5-6-10 ~~Table 5-6-8~~ **RTP 2012-2035 SCS by TAZ**

TAZ2k	Tier2	Household 2012	Employment 2012	Household 2035	Employment 2035
300000622	32893100	1,247	464	1,248	486
	32893200	225	243	225	245
	32893300	533	72	536	72
	Total	2,005	779	2,009	803
300000639	32894100	860	311	874	315
300000643	32901100	129	48	135	50
	32901200	873	262	893	264
	Total	1,002	310	1,028	314
300000648 (Project Area)	32897100	293	82	533	84
	32897200	798	619	1,074	630
	Total	1,091	701	1,607	714

Table 5-6-11 ~~Table 5-6-9~~ **RTP 2016-2040 SCS by TAZ**

TAZ2k	Tier2	Household 2016	Employment 2016	Household 2040	Employment 2040
300000622	32893100	1,249	357	1,250	404
	32893200	225	138	225	164
	32893300	533	141	536	145
	Total	2,007	636	2,011	713
300000639	32894100	857	706	858	720
300000643	32901100	132	54	133	62
	32901200	859	302	868	339
	Total	991	356	1,001	401
300000648 (Project Area)	32897100	309	173	538	184
	32897200	806	716	1,013	791
	Total	1,115	889	1,551	975

The 2012 version of TAZ 30000648 anticipated an increase in households of 516 units from 2012 to 2035, from 1,091 units to 1,607. The 2016 version of TAZ 300000648 anticipates an increase of 436 units from 2016 to 2040, from 1,115 to 1,551. Accordingly, the Project's 340 units are consistent with both TAZ versions. Therefore, the Project is consistent with the household growth projections of both the 2012-2035 and 2016-2040 versions of the RTP/SCS, and the Project is zoned suburban, which anticipates low density and large lots. The Proposed Project is therefore consistent with the RTP/SCS plans for regional planning, financial funding, alleviation of housing shortage, residential density, regional transportation planning and GHG reduction.

5.6.5 Mitigation Measures

Mitigation measures are required to be evaluated for the Project because the Project GHG emissions exceed the SCAQMD threshold of 3,000 MT CO₂e per year. In the absence of an Orange County Climate Action Plan (CAP), reasonable and feasible mitigation measures were obtained from publications prepared by the California Air Pollution Control Officers Association (CAPCOA). “Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures” (Quantifying GHG Mitigation Measures) was prepared in August 2010 along with the Association with the Northeast States for Coordinated Air Use Management and the National Association of Clean Air Agencies, with technical support from Environ and Fehr & Peers. It is primarily focused on the quantification of Project-level mitigation of greenhouse gas emissions associated with land use, transportation, energy use, and other related Project areas, and generally corresponds with mitigation measures previously discussed in CAPCOA’s earlier reports: CEQA and Climate Change; and Model Policies for Greenhouse Gases in General Plans. The CAPCOA 2010 Quantification Report lists nine general categories of emissions reduction potential: Energy, Transportation, Water, Area Landscaping, Solid Waste, Vegetation, Construction, Miscellaneous and General Plan Strategies. In presenting the potential effectiveness of reduction measures, the CAPCOA document presents a percent range of documented results based on the existing CalEEMod modeling program.

As detailed above, the CAPCOA 2010 Quantification Report provides mitigation measures in nine general areas. While many mitigation measures are applicable to single-family residential development, measures aimed at industrial, commercial, or mixed-use projects, while reviewed for potential applicability, may not be applicable to the project. To determine which CAPCOA mitigation measures were applicable to the Proposed Project, a comprehensive review of all CAPCOA mitigation measures was conducted. All mitigation measures included in CAPCOA’s Quantifying GHG Mitigation Measures document applicable to this Proposed Project were evaluated for applicability. Table 5-6-10 below provides a comprehensive inventory of all CAPCOA mitigation measures that may be interpreted to apply to the Proposed Project.

Table 5-6-10 identifies the applicable CAPCOA mitigation measure, briefly describes the strategy, and provides an analysis of whether each distinct CAPCOA mitigation measure could be adopted or implemented for the Proposed Project. If a mitigation measure could be adopted, such a notation appears in the table. If the mitigation measure is deemed to be infeasible, an analysis is included to explain why the measure is infeasible as it relates to the Proposed Project.

Those CAPCOA mitigation measures that are deemed feasible are required for the Proposed Project. All measures identified as “Adopted” in the table are included as mitigation measures herein.

As identified in Table 5-6-10, a wide variety of CAPCOA mitigation measures can be implemented to reduce GHG emissions. All CAPCOA mitigation measures that are identified as “Adopted” have been analyzed for Project-specific GHG reductions as presented in Appendix V. Table 5-6-10 provides a quantification of the emissions reduction for all mitigation measures that are applicable to the Proposed Project and have been determined to be feasible. A specific reduction in GHG emissions was calculated using the 2013 version of CalEEMod and is presented in the table below. In certain instances, CAPCOA mitigation measures do not include a quantifiable emissions reduction within the CalEEMod and are denoted as “NQ” for not quantifiable. Even measures that are NQ are still made a requirement of the Project in order to ensure adoption of all feasible mitigation measures.

Table 5-6-10 GHG Emissions Reductions from Project-Specific Measures

Category, CAPCOA MM Number	Project Applicability	Emissions Reduction
Accessibility Design Requirements		
Insert sidewalks on one side on all single-loaded streets, SDT-1	Adopted	3.52%
Insert sidewalks on both sides of all double-loaded streets, SDT-1		
Insert sidewalks on at least one side of main access roads, SDT-1		
Create on site parks within biking and walking distance of residences, SDT-1		
Install roundabouts on main access roads to reduce vehicle wait times and calm traffic, SDT-9		
Provide for equestrian access outside of residential building lot areas, SDT-1		
Provide for bike and pedestrian trails, LUT-9, SDT-1, SDT-9		
Create on site multi-use parks for various activities, LUT-9		
Provide bike parking at park areas, SDT-7		
Implement a neighborhood electric vehicle (NEV) network, SDT-3	Infeasible, as public streets will not allow secondary network	--
Provide multi-use trails in development with connections to municipal and Chino State Park trail systems from project (urban non-motorized open space zones), LU-7	Adopted	NQ
Limit parking supply near parks, PD-1	Adopted	0.18%
Plant shade trees, restore trees in Blue Mud Canyon, GP-4	Adopted	0.0002%
Building Envelope Design Requirements^[a]		
Greatly enhanced insulation (exceed Title 24 by 15%), BE-1	Adopted	1.55%
Greatly enhanced window insulation (exceed Title 24 by 15%), BE-1		
Greatly enhanced door insulation (exceed Title 24 by 15%), BE-1		
Reduce envelope leakage by 15% from Title 24, BE-1		
Reduce HVAC distribution losses by 15% from Title 24, BE-1		
Require high efficiency water heater that exceeds Title 24 by 15%, BE-2		
All exterior rooms daylighted to at least 1000 lumens on sunny day, BE-1		
Use very high efficiency lights (LED) that exceed Title 24 by 20%, BE-1		
Provide natural gas to all residences for gas appliances, BE-1		
Require programmable thermostat timers, BE-2	Adopted	NQ
Require very high efficiency HVAC (exceed Title 24 by 15%), BE-4	Adopted	0.38%
Use high efficiency Energy Star appliances, BE-4		

Category, CAPCOA MM Number	Project Applicability	Emissions Reduction
Implementation of Non-renewable Energy		
All homes will be constructed solar ready (sturdy roof and electric hookups), AE-2	Adopted	NQ
Provide circuit and capacity in garages of residential units for installation of electric vehicle charging stations, VT-3	Adopted	NQ
Alternative Energy Generation		
Establish on-site renewable energy systems – generic, AE-1	Infeasible - residential development is required to get its power from Southern California Edison, a licensed utility and it is infeasible to require each individual residence to establish an on-site renewable energy system.	--
Establish on-site renewable energy systems – solar power, AE-2	Infeasible – residential development, not commercial development, and no location or ability to install on site solar power plant. Also cost prohibitive. Most residences do not have sufficient resources to install solar generation, due to location or design, and there are no regulations in place for production and/or sale of the electricity to Southern California Edison. It would also change aesthetic appearance of neighborhood.	--
Utilize a combined heat and power system, AE-4	Infeasible – residential development with individual homes, each with their own HVAC.	--
Water Supply and Use Reduction^(a)		
High efficiency showerheads that exceed Title 24 by 20%, WUW-1	Adopted	0.37%
High efficiency toilets that exceed Title 24 by 20%, WUW-1		
Low flow kitchen faucets that reduce flow by 18%, WUW-1		
Low flow bathroom faucets that reduce flow by 32%, WUW-1		
Require smart irrigation systems combined with drip irrigation in all common areas, WUW-3,4	Adopted	0.75%
Require smart irrigation systems combined with drip irrigation in all residential lot landscaping within lot lines, WUW-4		
HOA will adopt water conservation strategy for common areas, WUW-2,3		
Drought tolerant landscaping in all common areas within the residential tracts, limiting turf to no more than 20% of the entire park area, WUW-5	Adopted	0.17%
Drought tolerant/fire resistant landscaping in common areas along trails where feasible, WUW-6	Adopted	NQ
Use locally sourced water supply per NEAPS, WSW-1,3	Adopted to the extent that YLWD adopts recommendations of the Northeast Area Planning Study for use of groundwater from the west	0.57%
Use reclaimed water, WSW-1	Infeasible – water is provided from YLWD, which has adopted its own reclaimed water programs.	--
Use gray water, WSW-2	Infeasible – water is provided from YLWD which has adopted its own programs and there are no regulations in place for gray water use.	--

Category, CAPCOA MM Number	Project Applicability	Emissions Reduction
Landscape Equipment		
Provide electrical outlets on exterior of all building walls so that electric landscape equipment is compatible with all built facilities, A-3	Adopted	NQ
Prohibit gas-powered landscape equipment, A-1	Infeasible as landscape area is over 200 acres. Large areas are without access to electricity as they were left natural or restored to low water use landscaped areas so gas powered landscape equipment is required. However, individual dwellings are equipped with outlets so that individual lots can be serviced through electric landscape equipment, at the homeowner's option.	--
Implement lawnmower exchange program, A-2	Infeasible as the project has not been constructed, also see response to A-1 above.	--
Infrastructure Design, Lighting		
Install high pressure sodium cutoff street lights with solar sensors, LE-1	Adopted	1.06%
Install solar powered LED lighting for monument lights and main access lighting, LE-1		
Replace traffic lights with LED traffic lights	Infeasible – No traffic lights on site. There is a mitigation measure for funding of a traffic light at Via Del Agua and Yorba Linda Blvd in the jurisdiction of the City of Yorba Linda, but the County cannot dictate the design or installation of the City's traffic light.	--
Solid Waste		
Institute or extend recycling and composting services, SW-1	Infeasible – there are existing county programs and they will be used, but this project cannot institute or create them	--
Transportation, Land Use/Location		
Increase density, LUT-1	Infeasible – increasing density would increase GHG emissions because of increased vehicle miles traveled, increased energy use, etc. Would conflict with City of Yorba Linda General Plan which calls for low-density housing.	--
Increase location efficiency, LUT-2	Infeasible as location of project cannot be changed and streets for offsite access are already in place.	--
Increase diversity of urban and suburban developments (mixed use), LUT-3	Infeasible, the City of Yorba Linda General Plan calls for low-density housing on the project site.	--
Increase destination accessibility, LUT-4	Infeasible – surrounding street system already in place, location cannot be changed. Multi-use trails are being constructed for hiking, biking, and equestrian use.	--
Increase transit accessibility, LUT-5	Infeasible – surrounding street system and transit system already in place.	--

Category, CAPCOA MM Number	Project Applicability	Emissions Reduction
Integrate affordable and below market rate housing, LUT-6	Infeasible, present entitlements are for low density and development costs prohibit below market housing. Would conflict with City of Yorba Linda General Plan designation and policies calling for low-density housing on site.	--
Orient project toward non-auto corridor, LUT-7	Infeasible, project location cannot be changed to orient toward non-auto center.	--
Locate project near bike path/bike lane, LUT-8	Infeasible as project not located near existing bike path, although bike paths are being constructed as part of the project.	--
Improve design of development, LUT-9	Infeasible as project has already been well designed with all feasible mitigation measures in place.	--
Vegetation		
Urban tree planting, V-1	Adopted	NQ
Create new vegetated open space	Infeasible – new development so new open space cannot be created, although restoration of habitat in Blue Mud Canyon is included in the Specific Plan and Habitat Mitigation and Monitoring Program.	--
Construction		
Use alternative fuels for construction equipment, C-1	Infeasible – economic constraints and the amount of earth moving equipment involved all runs on diesel. There is no equipment capable of doing the work necessary for this project readily available in the area that would run on alternate fuels. However, Tier 3 equipment is required to reduce emissions.	--
Use electric and hybrid construction equipment, C-2	Infeasible – economic constraints and the amount of earth moving equipment involved runs on diesel. There is no equipment capable of doing the work necessary for this project readily available in the area that would run on alternate fuels. However, Tier 3 equipment required to reduce emissions.	--
Limit construction equipment idling beyond regulation requirements, C-3	Infeasible – SCAQMD already proscribes unnecessary idling and there is no need for additional regulation. Existing construction GHG emissions are already under threshold and are deemed insignificant.	--
Institute a heavy duty off-road vehicle plan, C-4	Infeasible – a construction grading plan is already required prior to issuance of grading permit, which regulates days, hours, conditions and times of operations.	--
Miscellaneous		
Establish off-site mitigation	Infeasible – all mitigation can be implemented on site	--

Category, CAPCOA MM Number	Project Applicability	Emissions Reduction
<u>Use local and sustainable building materials</u>	<u>Infeasible – residential project has specific requirements for materials that are not produced locally. However, the project will comply with the California 2016 Green Building Code effective January 1, 2017 as set forth in Mitigation Measure GHG-39.</u>	--
Total GHG Emissions Reduction Estimated		8.08%^[b]

[a] References to Title 24 shall mean the requirements in place in 2014.

[b] Total GHG emission reduction is less than the sum of the individual measures because some measures have less reduction potential when other measures are implemented.

NQ - Measure has some emission reduction potential, but is not quantifiable with CalEEMod.

Each mitigation measure as adopted in Table 5-6-10 above and identified in CalEEMod is discussed below with a brief summary of the measure and the assumptions used in the modeling.

Pedestrian access. Pedestrian access covers two of the CAPCOA mitigation measures (i.e., SDT-1, SDT-2, and SDT-7). SDT-1 would improve the pedestrian network throughout the Project and connections to off-site areas. SDT-2 would implement traffic calming measures for the entire Project Site. These measures will be used throughout the Project and connecting projects wherever possible. The CalEEMod mitigation option of “Improve Pedestrian Network” for project site and connecting off-site was checked. Additionally, “Provide Traffic Calming Measures” set at 100% for streets and intersections were selected.

Provide multi-use trails in development. This measure, identified in CAPCOA as LUT-7, would encourage walking instead of use of automobiles. However, the emission reductions for this measure cannot be quantified using CalEEMod.

Limit parking supply near parks. CAPCOA identifies this measure as PDT-1. Since the developer is only limiting parking near parks, it was estimated that only a 0.5% reduction in parking spaces would occur. Accordingly, the CalEEMod mitigation options for “Limit Parking Supply” was selected with this reduction.

Plant shade trees. The developer is committing to a restoration of program for Blue Mud Canyon. The trees that are planted will sequester GHG gases. The number and types of trees have not been determined, however, it is envisioned that at least 100 trees will be planted. CalEEMod was modeled with 100 new trees using the miscellaneous species category.

Exceed Title 24 by 15%. Title 24 mandates certain building features, including insulation, requirements. All of these measures fall under the CAPCOA Mitigation BE-1. For the CalEEMod modeling, it was assumed that Title 24 energy conservation requirements would be exceeded by 15%.

Require programmable thermostat timers. Identified as measure BE-2 in the CAPCOA document, is not available for modeling in CalEEMod.

Energy Star appliances/low energy cooling. The use of Energy Star appliances reduces the energy consumption of refrigerators, clothes washers, dishwashers, and ceiling fans. CAPCOA's (Measure BE-4) recommendations for energy reduction are included in the CalEEMod and were used. Some use of the air conditioner would be replaced by the use of ceiling fans with this mitigation measure. The recommended defaults in CalEEMod were used; specifically, 30% reduction for clothes washer, 15% reduction for dish washer, 50% reduction for fans, and 15% reduction for refrigerator.

Construct homes solar ready. Building homes that are solar ready encourages homeowners to add solar panels in the future. This is CAPCOA Measure AE-2, and cannot be quantified with CalEEMod.

Provide circuit and capacity in garages for electric vehicle charging. Providing the proper circuitry in garages facilitates the use of electric vehicles by residents. This is included in CAPCOA Measure VT-3, but cannot be quantified using CalEEMod.

Low water flow fixtures. There are several low flow water fixtures that can be employed and are grouped in CAPCOA Measure WUW-1. Using low water flow fixtures in the house will reduce water consumption, reduce electric power generation, and consequently reduce GHG emissions. The CAPCOA/CalEEMod defaults for reductions in water usage with low flow fixtures were used for the modeling; specifically, 32% reduction for bathroom faucets, 18% reduction for kitchen faucets, 20% reductions for high efficiency toilets and showerheads.

Require smart and drip irrigation. This measure as proposed would require smart and drip irrigation and would adopt water conservation strategies for common areas. These measures are included in CAPCOA WUW-2, WUW-3, and WUW-4. For CalEEMod it was estimated that 6.1% reduction would occur using water-efficient irrigation systems, and that the maximum applied water allowance (MAWA) would be reduced to roughly 48,545 gallons per year. These values are based on the discussion in the CAPCOA document.

Turf reduction. Lawns and turf require the highest water consumption on a per foot basis. Reducing turf reduces the amount of water consumed. With 340 homes on large lots and sizable common areas, it is possible that 400 of the 469 Project acres could ultimately be turf. In the CalEEMod mitigation measure WUW-5 was selected with a turf area of 400 acres and a modest potential reduction in turf of 9%, or 36 acres would not be developed as turf.

Drought-tolerant/fire resistant landscaping. Much of the fire resistant landscaping that can be used is drought tolerant. This approach is described in CAPCOA Measure WUW-6; however, it cannot be quantified with CalEEMod.

Use locally sourced water. Considerable energy is used to transport water from its source to homes in Southern California. CAPCOA suggests that up to 81% savings can be achieved if reclaimed water is used. The Project will use locally sourced water, avoiding the huge energy costs associated with imported water. There is no option in CalEEMod for locally sourced water; however, reclaimed water avoids the energy

consumption associated with imported water. Therefore, CalEEMod (Measure WSW-1) was used to model the benefits of locally sourced water. One hundred percent (100%) of the water use for the Project is anticipated to be locally sourced.

Provide electrical outlets on exterior of building walls. This measure facilitates the use of electric landscape equipment and is included in CAPCOA Measure A-3. The benefits of this measure are not quantifiable with CalEEMod.

High efficiency lighting. A significant source of GHG emissions is due to the electric generation associated with street lighting. CAPCOA states that up to 40% of the energy can be saved using high-pressure sodium cutoff lights. Per the CAPCOA recommendation (LE-1), a 40% reduction was assumed in the analysis.

Mitigation Measure Reduction Results

Operational Emissions Only

The CalEEMod model run for operational emissions resulted in an unmitigated GHG total of 5,923.3 as shown in Table 1 of the GHG Assessment. With application of all feasible mitigation measures for operational emissions, a total reduction of 8.08% can be achieved resulting in a total of 5,444.6 MT CO₂e. This represents a reduction of 478.7 MT CO₂e. However, the reduction in operational emissions is above the significance threshold and, therefore, will exceed the threshold by 2,444.6 MT CO₂e.

Construction and Operational Emissions Combined

The required Project-specific mitigation measures consistent with the CAPCOA measures detailed in Table 5-6-10 achieve a Project-specific total reduction of GHG emissions of 7.93%, which results in a reduction of 478.7 MT CO₂e per year. This 7.93% reduction is in addition to the GHG reduction from state regulations shown on Table 5-6-7. The GHG reductions that can be achieved by incorporating the mitigation measures listed in Table 5-6-10 above for the Proposed Project are estimated to be 7.93% based on available modeling through the CalEEMod program from SCAQMD and estimates from the 2010 CAPCOA publication as shown in Table 2 of the GHG Assessment. This 7.93% reduction represents an estimate for those proposed measures that can be quantified, based on current modeling, and the 7.93% reduction is not a performance criterion or a guaranteed reduction prediction. Rather, the specific measures identified as adopted in Table 5-6-10 are the applicable recommended mitigation measures, which current modeling indicates will result in a 7.93% reduction in GHG emissions. Total project emissions prior to mitigation result in 6,037.3 MT CO₂e. Total Project GHG emission reductions after Project-specific mitigation result in approximately 5,558.6 MT CO₂e, which exceeds the GHG significance threshold by approximately 2,558.6 MT CO₂e.

The Proposed Project has incorporated all feasible mitigation measures to reduce GHG impacts. These measures are imposed as greenhouse gas emissions reduction measures and are also included as design features within the Esperanza Hills Specific Plan. It should be noted that during the public review and comment period on the Draft EIR in 2013 and 2014 and up to prior final approval by the Board of Supervisors in June of 2015, no additional specific mitigation was suggested by any commentor, other than compliance with mitigation contained in the RTP/SCS, which does not mandate Project-specific mitigation measures, as set forth in the discussion on RTP/SCS above.

CEQA Guidelines §15088.5(a)(1) states that unless “significant new information” showing that a new significant environmental impact would result from the Project or from a new mitigation measure proposed to be implemented, no recirculation of the EIR is required. Table 5-6-11 below is a summary of the analysis regarding whether the required Project-specific mitigation measures identified as adopted and required in Table 5-6-10 result in either a substantial increase in the severity of an environmental impact or from a new mitigation measure. As detailed in Table 5-6-11, the required Project-specific mitigation measures reduce GHG emissions beyond previous estimates and do not result in any new significant environmental impact not previously identified.

Table 5-6-11 below analyzes whether the CAPCOA mitigation measures required could have the potential to result in new or greater environmental impacts. For each measure or category of related measures information is provided which supports the conclusion that the required mitigation measures will not result in new environmental impacts.

Table 5-6-11 Environmental Impact Analysis for Required Mitigation Measures

Category (CAPCOA Mitigation Measure #)	Will Mitigation Measures Result in New Environmental Impact?
Accessibility Design Requirements	
<u>Provide bike parking at park areas (SDT-7)</u>	<u>Bike parking areas will support use of biking/hiking trails and internal circulation trails, reducing vehicle use and encouraging use of recreational amenities. No new environmental impacts will result.</u>
Building Envelope Design Requirements*	
<u>Reduce envelope leakage by 15% from Title 24 (BE-1)</u>	<u>These measures will occur within the residences and were analyzed in terms of overall energy efficiency. Windows and doors are required to meet high efficiency standards. Increased efficiency due to provision of these building requirements will not result in new environmental impacts.</u>
<u>Reduce HVAC distribution losses by 15% from Title 24 (BE-1)</u>	
<u>Require very high efficiency HVAC (exceed Title 24 by 15%) (BE-4)</u>	
<u>Require programmable thermostat timers (BE-2)</u>	
<u>Require high efficiency water heater that exceeds Title 24 by 15% (BE-2)</u>	
<u>All exterior rooms daylighted to at least 1000 lumens on sunny day (BE-1)</u>	
<u>Use very high efficiency lights (LED) that exceed Title 24 by 15% (BE-1)</u>	
<u>Provide natural gas to all residences for gas appliances (BE-1)</u>	

Category (CAPCOA Mitigation Measure #)	Will Mitigation Measures Result in New Environmental Impact?
Implementation of Non-renewable Energy	
All homes will be constructed solar ready (sturdy roof and electric hookups) (AE-2)	Provision of circuitry and hook-ups will be interior to the residences and will not result in aesthetic or other new environmental impacts.
Provide circuit and capacity in garages of residential units for installation of electric vehicle charging stations (VT-3)	
Water Use Reduction*	
Require smart irrigation systems combined with drip irrigation in all common areas (WUW-3, WUW-4)	The concept and requirement for drought tolerant landscaping was discussed and analyzed in the FEIR (Chapter 5, Section 5.1 - Aesthetics, PDF-5 and Specific Plan-Design Guidelines). The drought tolerant landscaping and low water use irrigation and specific plant palettes required by the project as analyzed in the FEIR are consistent with recent requirements for lower water use due to the drought. No biological impacts will occur due to use of drought tolerant plant palettes. No new other environmental impacts will occur.
Require smart irrigation systems combined with drip irrigation in all residential lot landscaping within lot lines (WUW-4)	
High efficiency showerheads that reduce flow by 20% (WUW-1)	
High efficiency toilets that reduce flow by 20% (WUW-1)	
Low flow kitchen faucets that reduce flow by 18% (WUW-1)	
Low flow bathroom faucets that reduce flow by 32% (WUW-1)	
HOA will adopt water conservation strategy for common areas (WUW-2)	
Drought tolerate landscaping in all common areas within the residential tracts, limiting turf to no more than 20% of entire park area (WUW-5)	
SCAQMD Requirements	
No new measures	
Landscape Equipment	
Provide electrical outlets on exterior of all building walls so that electric landscape equipment is compatible with all built facilities (A-3)	Exterior electrical outlets will be insignificant aesthetically and will comply with all applicable building and electrical codes. Provision of electrical outlets to accommodate additional energy and air quality efficient equipment will not result in new environmental impacts.
Infrastructure Design	
Install high pressure sodium cutoff streets with solar sensors- (LE-1)	The Specific Plan provides for review of custom street lighting by the County and SCE to meet current standards and requirements. The FEIR (Chapter 5, Section 5.1-Aesthetics, MM AE-1 and Specific Plan-Design Guidelines) discussed light pollution and glare, requiring lighting to be consistent with night sky lighting practices. Use of high pressure sodium and solar powered LED lighting provides a specific method for achieving what was analyzed. No new aesthetics or other environmental impacts will result.
Install solar powered LED lighting for monument lights and main access lighting (LE-1)	
Limit outdoor lighting requirements (LE-2)	

*All references to Title 24 shall mean the requirements in place in 2014.

As noted above, Table 5-6-10 identifies all CAPCOA mitigation measures that may be applicable to the Proposed Project. The table includes an analysis of feasibility for all of the applicable CAPCOA mitigation measures. Several CAPCOA mitigation measures were determined to be infeasible related to the Proposed Project. Included

[in Table 5-6-10 is an explanation of why the determination of infeasibility has been made.](#)

[As a result of the analysis above, the following are the Project-specific mitigation measures to be implemented.](#)

5. Short-Term Impacts (Construction)

Project-related ~~air quality~~[GHG](#) impacts were shown to be ~~potentially less than~~ significant during ~~project grading due to off-road diesel equipment NO_x emissions. To further minimize potential impacts, during~~[Project](#) construction and ~~grading activities~~[the no mitigation measures are required. Specific](#) construction ~~contractor shall ensure that standard construction practices set forth in the SCAQMD Handbook shall be implemented. In addition,~~[related](#) Mitigation Measures AQ-1, AQ-2, and AQ-3 have been included in Section 5.2, Air Quality (beginning on page 5-65), to minimize construction-related air quality impacts, including potential GHG emissions. [The mitigation measures are included herein for ease of reference.](#)

~~GHG-1 Prior to issuance of building permits for residential units, the County shall ensure that all fireplaces are gas rather than wood burning.~~

6. Long-Term Impacts (GHG)

~~With incorporation of the following mitigation measure, operational emissions would be reduced; however, GHG emissions would exceed SCAQMD significance thresholds.~~

~~GHG-2 Prior to construction of project, the developer shall implement or develop a plan for implementation of one or more mitigation strategies for the reduction of greenhouse gas (GHG) emissions from the report "CEQA and Climate Change" prepared by the California Air Pollution Control Officers Association (CAPCOA) as updated in 2010. The total benefit of the mitigation strategies must result in a minimum 5% reduction in GHG emissions from the business-as-usual value. Alternative strategies not listed in the CAPCOA report may be used with approval of the Orange County Planning Director. The selected strategies, including measures for their long-term maintenance, must be described in a memo submitted to and approved by the County Planning Department prior to initial occupancy of any on-site facility.~~

[AQ-1 Prior to issuance of grading permit, the Project Applicant shall provide evidence that ensures the use of enhanced control measures for diesel exhaust emissions to maintain NO_x impacts at a less than significant level to the Manager, Permit Services. These measures shall include:](#)

- [• Utilize well-tuned off-road construction equipment](#)
- [• During grading, require that contractors use Tier 3 on all heavy equipment \(excavators, graders, and scrapers exceeding 100 HP rated power\) if the entire project is graded at one time for NO_x emissions, unless use of such mitigation is demonstrated to be technically infeasible for a given piece of equipment](#)

- During grading, require that contractors employ oxidation catalysts that shall achieve 40% reduction during grading for excavation graders and scrapers exceeding 100 HP rated power if the entire project is graded at one time, unless use of such mitigation is demonstrated to be technically infeasible for a given piece of equipment.
- Enforce 5-minute idling limits for on-road trucks and off-road equipment

AQ-2 Prior to issuance of grading permit, the Project Applicant shall provide to the Manager, Permit Services, evidence that ensures that standard construction practices as set forth in the SCAQMD Handbook shall be implemented.

AQ-3 During construction, the Project Applicant shall ensure that best management practices for dust control are implemented. These include:

- Apply soil stabilizers or moisten areas that are inactive for 96 hours or more
- Prepare a high wind dust control plan
- Address previously disturbed areas if subsequent construction is delayed more than 96 hours
- Water exposed surfaces as needed to avoid visible dust leaving the construction site (typically three times per day)
- Wet down or cover all stockpiles with tarps at the end of each day or as needed
- Provide water spray during loading and unloading of earthen materials
- Minimize in-out traffic from construction zone
- Cover all trucks hauling dirt, sand or loose material or require all trucks to maintain at least two feet of freeboard
- Sweep streets daily if visible soil material is carried out from the construction site
- Use perimeter sandbags and wind fences for erosion control

Long-Term Impact (GHG)

Specific Mitigation Measures for long-term impacts are based on Table 5-6-10 above.

GHG-1 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project Site improvement plans reflect that sidewalks are provided on one side of all single loaded streets, both sides of double loaded streets and on at least one side of main access roadways.

GHG-2 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project Site improvement plans reflect that multi-use trails within the Project with connections to municipal and Chino Hills State Park trail systems are provided.

GHG-3 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project Site improvement plans reflect provision of on-site parks within biking and walking distance of residences.

- GHG-4 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project Site improvement plans reflect the installation of roundabouts on main access roads.
- GHG-5 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project Site improvement plans reflect that equestrian access outside of residential building lot areas is provided.
- GHG-6 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project Site improvement plans and rough grading plans provide for bike and pedestrian trails.
- GHG-7 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project Site improvement plans reflect that multi-use parks for various activities are provided.
- GHG-8 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project Site improvement plans reflect that bike parking is provided at park areas.
- GHG-9 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project Site improvement plans reflect that automobile parking is limited near parks.
- GHG-10 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project plans include provision of shade trees and restoration of trees in Blue Mud Canyon.
- GHG-11 Prior to issuance of residential building permits, the County of Orange shall ensure that insulation is required to exceed Title 24 requirements by 15% as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.
- GHG-12 Prior to issuance of residential building permits, the County of Orange shall ensure that window insulation is required to exceed Title 24 requirements by 15% as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.
- GHG-13 Prior to issuance of residential building permits, the County of Orange shall ensure that door insulation is required to exceed Title 24 requirements by 15% as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.
- GHG-14 Prior to issuance of residential building permits, the County of Orange shall ensure a reduction in Title 24 envelope leakage by an additional 15% as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-15 Prior to issuance of residential building permits, the County of Orange shall ensure a reduction in Title 24 HVAC distribution losses by an additional 15% as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-16 Prior to issuance of residential building permits, the County of Orange shall ensure the use of very high efficiency HVAC that exceeds Title 24 by 15% as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-17 Prior to issuance of residential building permits, the County of Orange shall ensure that programmable thermostat timers are required as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-18 Prior to issuance of residential building permits, the County of Orange shall ensure that high efficiency water heaters that exceed Title 24 by 15% are required as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-19 Prior to issuance of residential building permits, the County of Orange shall ensure that exterior rooms are daylighted to at least 1000 lumens on sunny days and required as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-20 Prior to issuance of residential building permits, the County of Orange shall ensure that use of very high efficiency lights (LED) that exceed Title 24 by 15% is required as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-21 Prior to issuance of residential building permits, the County of Orange shall ensure that the Project plans reflect the use of high efficiency Energy Star appliances that exceed Title 24 by 15% are required as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-22 Prior to issuance of residential building permits, the County of Orange shall ensure that natural gas is provided to all residences for gas appliances and required as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-23 Prior to issuance of residential building permits, the County of Orange shall ensure that all homes constructed will be solar ready (sturdy roof and electric hookups) and required as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-24 Prior to issuance of residential building permits, the County of Orange shall ensure that the Project plans reflect the provision of circuitry and capacity in residential garages for installation of electric vehicle charging stations and required as a condition

by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-25 Prior to issuance of residential building permits, the County of Orange shall ensure the requirement for high efficiency showerheads that reduce flow by 20% as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-26 Prior to issuance of residential building permits, the County of Orange shall ensure that the requirement for high efficiency toilets that reduce flow by 20% is required as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-27 Prior to issuance of residential building permits, the County of Orange shall ensure the requirement for low flow kitchen faucets that reduce flow by 18% as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-28 Prior to issuance of residential building permits, the County of Orange shall ensure that the Project plans reflect the requirement for low flow bathroom faucets that reduce flow by 32%, with installation to be verified by the County prior to issuance of Certificates of Use and Occupancy.

GHG-29 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure the requirement for smart irrigation systems combined with drip irrigation in all common areas as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-30 Prior to issuance of residential building permits, the County of Orange shall ensure the Project landscaping plans include the requirement for smart irrigation systems combined with drip irrigation in all residential lot landscaping within lot lines as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-31 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project plans reflect the requirement for the Homeowners' Association to adopt water conservation strategies for common areas to be shown by recordation of Codes, Covenants and Restrictions.

GHG-32 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project landscape improvement plans reflect a performance specification requiring use of drought tolerant landscaping in all common areas within the residential tracts, limiting turf to no more than 20% of the entire park area.

GHG-33 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project landscape improvement plans reflect a performance specification requiring the use of drought tolerant/fire resistant landscaping in common areas along trails, where feasible.

GHG-34 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project Site improvement plans reflect a performance specification requiring use of locally sourced water supply per the Northeast Area Planning Study (NEAPS).

GHG-35 Prior to issuance of residential building permits, the County of Orange shall ensure that the Project plans prohibit use of wood burning stoves and fireplaces as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-36 Prior to issuance of residential building permits, the County of Orange shall ensure that the Project plans reflect provision of electrical outlets on the exterior of all building walls so electric landscape equipment is compatible for maintenance as a condition by performance specification on permitted construction documents and verified for Certificate of Occupancy.

GHG-37 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project Site improvement plans reflect a performance specification for use of high pressure sodium cutoff street lights with solar sensors.

GHG-38 Prior to issuance of Precise Grade grading permits, the County of Orange shall ensure that the Project Site improvement plans reflect a performance specification for use of solar powered LED lighting for monument lights and main access lighting.

GHG-39 Prior to issuance of Rough Grade grading permit, the County of Orange will ensure compliance with the 2016 Green Building Code effective January 1, 2017 for site development requirements and prior to issuance of residential building permit, the County of Orange will ensure compliance with the Green Building Code for residential construction requirements.

GHG-40 Prior to issuance of Precise Grade grading permit, the County of Orange shall ensure that lighting for the park areas will be programmed to be turned off no later than 10:00 p.m. and motion detectors shall be installed on lighting on pedestrian pathways.

~~5.6.5~~ 5.6.6 Level of Significance after Mitigation

~~The project may eventually be annexed to the City of Yorba Linda (City). The City has requested that the County consult with it regarding sustainability initiatives planned to be incorporated as project design features to reduce GHG emissions. The County and City currently have no formally adopted climate change action plan (CAP). However, any adoption and implementation of mitigation measures for GHG impact minimization under the County CEQA responsibilities will be equally effective if the project is annexed to the City. Therefore, to achieve the required 5% reduction in GHG emissions, reasonable control measures (RCMs) are included herein as depicted in Table 5-6-9 above. Mitigation Measure GHG-2 will ensure that such RCMs are included during the construction phase to reduce GHG by combining with SCAQMD standards towards achievement of the AB-32 goal.~~

~~Implementation of the mitigation measures identified in Section 5.2.5, Mitigation Measures (Air Quality) beginning~~As shown in Table 5-6-5, Construction Emissions, the Project will not result in short-term construction related greenhouse gas emissions impacts.

The Project is designed and proposed to be consistent with State-mandated programs for GHG reductions. Application of Project design features and mitigation measures will achieve the goals established by AB 32, resulting in Project consistency with adopted policies and regulations. However, the Project will have a potentially significant impact requiring mitigation as identified herein.

To achieve a reduction in GHG emissions, the Project is required to provide the Project-specific mitigation measures set forth in Table 5-6-10 above.

Mitigation Measures AQ-1 through AQ-3, Haz-1, and GHG-1 through GHG-40 ensure that Project compliance with AB 32 goals and policies can be achieved. Through the implementation of mitigation measures, the Project can achieve an 7.93% reduction in construction and operational GHG emissions. With the implementation of mitigation measures, the Project is consistent with California's efforts to meet the goals of AB 32.

Project operational emissions alone are above the significance threshold of 3,000 MT CO₂e. As noted herein, and as shown in Table 1 of the GHG Assessment, unmitigated operational emissions total 5,923.3 MT CO₂e. Application of all feasible mitigation measures reduces operational greenhouse gas emissions to a total of 5,444.6 MT CO₂e. This represents an 8.08% total reduction. However, operational emissions are 2,444.6 MT CO₂e above the significance threshold and the impact for operational emissions alone is also significant and unavoidable.

~~As shown on page 5-88 above) will reduce GHG emissions to the extent feasible. As shown in~~Table 5-6-5, Construction Emissions ~~(page 5-268)~~ and Table 5-6-6, Proposed Project Residential Operational Emissions ~~(page 5-268)~~, the size of the Proposed Project is such that ~~direct combined unmitigated short-term~~ (construction-GHG emissions) and indirect (long-term) operations GHG emissions will exceed the SCAQMD screening level threshold (3,000 MT CO₂e per year) by a large margin (3,889.6 MT per year). ~~This finding is based on a BAU assumption and does not include statewide or locally sponsored mitigation. State program reductions reduce the emissions in the BAU scenario by 23.9%. Feasible local reductions, with 037.3 MT CO₂e per year) which has been determined by the County to be the appropriate quantitative GHG significance threshold for this Project. With application of RCMs as summarized above, would result in an additional 10% reduction. Specific local reductions to be implemented on the site would be determined prior to construction based on then-current strategies and technologies and as required in Mitigation Measure GHG-2~~all feasible Project-specific mitigation measures contained within Table 5-6-10 above, the Project can achieve an estimated 7.93% reduction in GHG emissions, or approximately 478.7 MT CO₂e. However, even with implementation of ~~required and discretionary GHG reduction measures, the proposed mitigation~~

measures (which can result in a 7.93% reduction in total GHG emissions), as well as reductions from state programs expected to be implemented directly by state and regional agencies (an additional 23.9%), annual emissions cannot be reduced below the GHG significance threshold of SCAQMD's advisory screening level and the impact remains threshold of 3,000 MT CO₂e. As shown in Table 2 of the GHG Assessment, the total mitigated Project emissions of 5,558.6 MT CO₂e exceed the quantitative GHG significance threshold by 2,558.6 MT CO₂e and, therefore, the combined construction and operational impacts of the Project on GHG remain significant and unavoidable.

5.6.65.6.7 Cumulative Impacts

With respect to GHG, the Proposed Project will add emissions above the SCAQMD's advisory level of 3,000 MT ~~CO₂e~~ CO₂e per year. The addition of the adjacent Cielo Vista project and the 18 related projects identified in the Traffic Analysis will result in additional GHG emissions that will, when combined with Project GHG emissions, further contribute to an exceedance of GHG and, therefore, cumulative impact remains significant and unavoidable. Cumulative impacts can also be assessed on a regional, statewide, or global basis, since GHG emissions result in impacts on global GHG levels and global climate change concerns, rather than being limited to local, regional or statewide impacts. The SCAQMD, the CARB and U.S. EPA have considered the overall potential regional, statewide or global GHG emissions. The Proposed Project, with or without mitigation, will result in additional GHG emissions which will be significant standing alone on an individual project basis, as well as when combined with the projects considered in the Traffic Analysis, or within the SCAQMD regional, the State of California, or global emissions.

5.6.75.6.8 Unavoidable Adverse Impacts

Project impacts related to GHG will remain above the SCAQMD ~~advisory level~~ quantitative GHG significance threshold used in this EIR for construction, operation, and either standing alone or when combined with other potential cumulative conditions increases in GHG emissions from other projects, regional, statewide, and global sources, and are, therefore, considered significant and unavoidable.