# Alamo Street Mixed Use Project
# Air Quality & Greenhouse Gas Study

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# ALAMO STREET MIXED USE PROJECT
# CITY OF SIMI VALLEY
# AIR QUALITY & GREENHOUSE GAS STUDY

This report is an analysis of the potential air quality and greenhouse gas (GHG) emissions impacts of the proposed Alamo Street Mixed Use Project located in Simi Valley, California. The report has been prepared by Rincon Consultants, Inc. under contract to AMG & Associates, LLC, and at the request of the City of Simi Valley for use in support of environmental documentation being prepared pursuant to the California Environmental Quality Act (CEQA). The purpose of this study is to analyze the project's criteria air pollutant and GHG emissions and the associated impacts to regional air quality and climate change. The analysis herein is based partially on the Traffic Impact Report prepared by LSA Associates, Inc. (2018).

## PROJECT DESCRIPTION

The project site measures approximately 6.88 acres and is comprised of 1.01 acre commercial parcel and a 5.87 acre residential parcel. The project site is located at the northeast corner of Alamo Street and Tapo Street, south of the Elwood shopping center in the city of Simi Valley. The site is currently occupied by an approximately 78,000 square foot retail center that is primarily vacant.

The project would involve demolition of all of the existing buildings except for one 8,300 square foot commercial building. The project would create three-story residential complexes separated by courtyards with a total of 278 residential units. The project would also include 611 spaces for the residential development and 33 parking spaces for the commercial building.

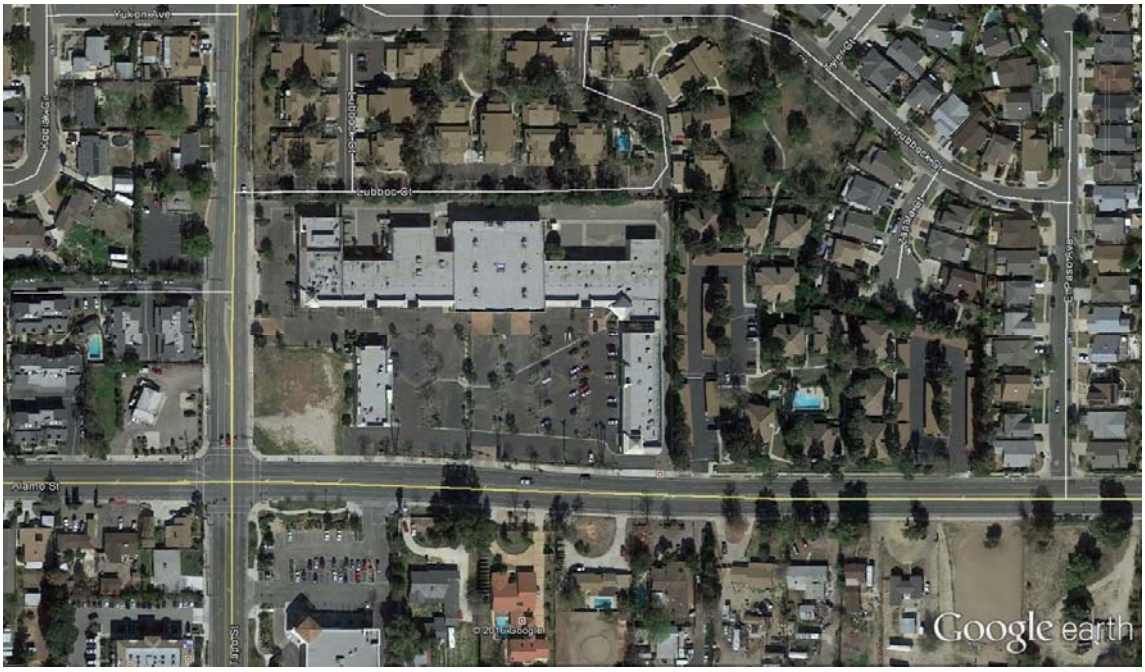


**Figure 1. Project Site Location**

# AIR QUALITY BACKGROUND

## Local Climate and Meteorology

The project site is located in the South Central Coast Air Basin (the Basin) and is under the jurisdiction of the Ventura County Air Pollution Control District (VCAPCD). Air quality in the Basin is affected by the emission sources located in the region, as well as by three natural factors:

- A **natural terrain barrier** to emission dispersion north and east of the metropolitan Los Angeles area.
- A **dominant on-shore flow** transports and disperses air pollution by driving air pollution originating in industrial areas along the coast toward the natural terrain barrier, limiting horizontal dispersion. The effect of this on-shore flow is a gradual degradation of air quality from coastal to inland areas. The greatest impacts can be seen in the San Gabriel Valley and near Riverside at the foot of the San Gabriel Mountains.
- **Atmospheric inversions** limit dispersion of air pollution on a vertical scale. Temperature typically decreases with altitude. However, under inversion conditions temperature begins to increase at some height above the ground. The temperature increase continues through an unspecified layer after which the temperature change with height returns to standard conditions. The inversion layer is typically very stable and acts as a cap to the vertical dispersions of pollutants.

## Air Quality Regulation

Federal and state governments have established ambient air quality standards for the protection of public health. The United State Environmental Protection Agency (USEPA) is the federal agency designated to administer air quality regulation, while the Air Resources Board (ARB) is the state equivalent in the California EPA. County-level Air Pollution Control Districts (APCDs) provide local management of air quality. The ARB has established air quality standards and is responsible for the control of mobile emission sources, while the local APCDs are responsible for enforcing standards and regulating stationary sources. The ARB has established 15 air basins statewide.

The USEPA has set primary national ambient air quality standards (NAAQS) for ozone, carbon monoxide (CO), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), $PM_{10}$, $PM_{2.5}$, and lead (Pb). Primary standards are those levels of air quality deemed necessary, with an adequate margin of safety, to protect public health. In addition, the State of California has established health-based ambient air quality standards for these and other pollutants, some of which are more stringent than the federal standards. Table 1 lists the current federal and state standards for regulated pollutants.

**Table 1**
**Federal and State Ambient Air Quality Standards**

| Pollutant | Averaging Time | Federal Primary Standards | California Standard |
|---|---|---|---|
| Ozone | 1-Hour | --- | 0.09 ppm |
| | 8-Hour | 0.070 ppm | 0.070 ppm |
| Carbon Monoxide | 8-Hour | 9.0 ppm | 9.0 ppm |
| | 1-Hour | 35.0 ppm | 20.0 ppm |
| Nitrogen Dioxide | Annual | 0.053 ppm | 0.030 ppm |
| | 1-Hour | 0.10 ppm | 0.18 ppm |
| Sulfur Dioxide | Annual | --- | --- |
| | 24-Hour | 0.14 ppm | 0.04 ppm |
| | 1-Hour | 0.075 ppm | 0.25 ppm |
| $PM_{10}$ | Annual | --- | 20 $\mu g/m^3$ |
| | 24-Hour | 150 $\mu g/m^3$ | 50 $\mu g/m^3$ |
| $PM_{2.5}$ | Annual | 12 $\mu g/m^3$ | 12 $\mu g/m^3$ |
| | 24-Hour | 35 $\mu g/m^3$ | --- |
| Lead | 30-Day Average | --- | 1.5 $\mu g/m^3$ |
| | 3-Month Average | 0.15 $\mu g/m^3$ | --- |

*ppm = parts per million;*
*$\mu g/m^3$ = micrograms per cubic meter*
*Source: ARB, 2016.*

The VCAPCD is the local air quality management agency. The local air quality management agency is required to monitor air pollutant levels to ensure that applicable air quality standards are met and, if they are not met, to develop strategies to meet the standards.

Depending on whether or not the standards are met or exceeded, the air basin is classified as being in "attainment" or "nonattainment." The part of the Basin within which the project site is located is in nonattainment for both the federal and state standards for ozone and state standards for particulate matter ($PM_{10}$) (ARB 2014). Thus, the Basin currently exceeds several state and federal ambient air quality standards and VCAPCD is required to implement strategies to reduce the pollutant levels to recognized acceptable standards. Characteristics of ozone and suspended particulates are described below.

Ozone

Ozone is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides ($NO_X$) and reactive organic gases (ROG[1]). $NO_X$ is formed during the combustion of fuels, while reactive organic gases are formed during combustion and evaporation of organic solvents. Because ozone requires sunlight to form, it mostly occurs in substantial concentrations between the months of April and October. Ozone is a pungent, colorless, toxic gas with direct health

[1] *Organic compound precursors of ozone are routinely described by a number of variations of three terms: hydrocarbons (HC), organic gases (OG), and organic compounds (OC). These terms are often modified by adjectives such as total, reactive, or volatile, and result in a rather confusing array of acronyms: HC, THC (total hydrocarbons), RHC (reactive hydrocarbons), TOG (total organic gases), ROG (reactive organic gases), TOC (total organic compounds), ROC (reactive organic compounds), and VOC (volatile organic compounds). While most of these differ in some significant way from a chemical perspective, from an air quality perspective two groups are important: non-photochemically reactive in the lower atmosphere, or photochemically reactive in the lower atmosphere (HC, RHC, ROG, ROC, and VOC).*

effects on humans, including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to ozone include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

Suspended Particulates

Atmospheric particulate matter is comprised of finely divided solids and liquids such as dust, soot, aerosols, fumes, and mists. The particulates that are of particular concern are $PM_{10}$ (which measures no more than 10 microns in diameter) and $PM_{2.5}$ (a fine particulate measuring no more than 2.5 microns in diameter). The characteristics, sources, and potential health effects associated with $PM_{10}$ and $PM_{2.5}$ can be different. Major man-made sources of $PM_{10}$ are agricultural operations, industrial processes, combustion of fossil fuels, construction, demolition operations, and entrainment of road dust into the atmosphere. Natural sources include windblown dust, wildfire smoke, and sea spray salt. The finer, $PM_{2.5}$ particulates are generally associated with combustion processes as well as being formed in the atmosphere as a secondary pollutant through chemical reactions. $PM_{2.5}$ is more likely to penetrate deeply into the lungs and poses a serious health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the small and fine particulate matter that is inhaled into the lungs remains there, which can cause permanent lung damage. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

## Current Air Quality

California's weather is heavily influenced by a semi-permanent high-pressure system west of the Pacific coast. The Mediterranean climate of the region and the coastal influence produce moderate temperatures year round, with rainfall concentrated in the winter months. The sea breeze, which is the predominant wind, is a primary factor in creating this climate and typically flows from the west-southwest in a day-night cycle with speeds generally ranging from 5 to 15 miles per hour.

Data on existing air quality in the Ventura County portion of the South Central Coast Air Basin are available for ozone and particulate matter emissions within the 2014 Ambient Air Monitoring Network Plan. The 2014 Ambient Air Monitoring Network Plan contains data for six monitoring locations throughout Ventura County. The monitoring station located closest to Simi Valley and most representative of air quality at the project site is the Simi Valley Station on the Simi Valley High School campus at 5400 Cochran Street approximately 1.4 miles southeast of the project site. Table 2 summarizes the annual air quality data from 2014 – 2016 in the local airshed for the criteria pollutants of greatest concern in Ventura County.

**Table 2**
**Ambient Air Quality at the Simi Valley Monitoring Station**

| Pollutant | 2014 | 2015 | 2016 |
|---|---|---|---|
| Ozone, ppm – Worst Hour | 0.097 | 0.096 | 0.101 |
| Number of days State exceedances (>0.09 ppm) | 1 | 1 | 1 |
| Ozone, ppm – Worst 8 Hours | 0.085 | 0.078 | 0.083 |
| Number of days of State exceedances (>0.07 ppm) | 15 | 13 | 7 |
| Number of days Federal exceedances (>0.07 ppm) | 15 | 13 | 7 |
| Carbon Monoxide, ppm – Worst 8 Hours | N/A | N/A | N/A |
| Number of days of State/Federal exceedances (>9.0 ppm) | N/A | N/A | N/A |
| Nitrogen Dioxide, ppm – Worst Hour | 0.047 | 0.041 | 0.039 |
| Number of days of State exceedances (>0.18 ppm) | 0 | 0 | 0 |
| Particulate Matter > 10 microns, ug/$m^3$ Worst 24 Hours | 57.2 | 62.8 | 166.1 |
| Estimated Number of Days of State exceedances (>50 $\mu g/m^3$) | 1 | 3 | 4 |
| Estimated Number of Days of Federal exceedances (>150 $\mu g/m^3$) | 0 | 0 | 1 |
| Particulate Matter <2.5 microns, $\mu g/m^3$ Worst 24 Hours* | 30.8 | 33.0 | 35.3 |
| Estimated Number of Days of Federal exceedances (>35 $\mu g/m^3$ ) | 0 | 0 | 0 |

*N/A = not measured*

*Source: ARB, 2014, 2015, 2016 Annual Air Quality Data Summaries available at http://www.arb.ca.gov/adam/topfour/topfour1.php*

*Note: California standards for ozone, carbon monoxide, and particulate matter are not to be exceeded. Federal standard for CO not to be exceeded more than once per year. Federal ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For $PM_{10}$, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.*

As shown in Table 2, the ozone concentrations at the Simi Valley Monitoring Station exceeded the one-hour state standard for one day in 2014, 2015, and 2016. The $PM_{10}$ concentrations exceeded federal standards for one day in 2016 and exceeded State standards for one, three, and four days in 2014, 2015, and-2016 respectively. Information regarding CO concentrations is not available from any of the monitoring stations in the County. Monitoring ceased in 2004 because of the low levels of CO recorded (VCAPCD, 2007)

## Air Quality Management Plan

Under state law, the VCAPCD is required to prepare a plan for air quality improvement for pollutants for which the District is in non-compliance. In 2007, VCAPCD adopted an Air Quality Management Plan (AQMP) that provides a strategy for the attainment of state and federal air quality standards. As noted previously, Ventura County is not in attainment for the 2008 federal eight-hour ozone standard. The plan for Ventura County to meet the 2008 federal ozone standard, which has a deadline of 2021, is currently in development. While the 2007 AQMP contains some additional local control measures, most of the emissions reductions that Ventura County needs to attain the federal eight hour ozone standard and continue progress to the state ozone standard will come from the ARB's 2007 State Implementation Plan (SIP) and 2009 Reasonably Available Control Technology State Implementation Plan (2009 RACT SIP). These SIPs contain comprehensive emission reduction programs that focus on reducing

emissions from mobile sources, consumer products, and pesticides to substantially improve air quality.

The 2007 AQMP also presents the 2003 – 2005 Triennial Assessment and Plan Update required by the California Clean Air Act (CCAA). The goal of the CCAA is to achieve more stringent health-based state air quality standards at the earliest practicable date. Ventura County is designated a severe non-attainment area under the CCAA and must meet many of the most stringent requirements under this Act.

### Sensitive Receptors

Ambient air quality standards have been established to represent the levels of air quality considered sufficient, with an adequate margin of safety, to protect public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress, such as children under 14; the elderly over 65; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases. The majority of sensitive receptor locations are, therefore, schools and hospitals.

The project site is located at the northeast corner of Tapo Street and Alamo Street in a residential area of Simi Valley. Sensitive receptors near the project site include residences immediately adjacent to the project site to the north and east, and residences located across Tapo and Alamo Streets to the south and west. In addition, the project includes residential uses, which would be sensitive receptors after project construction is complete.

The ARB currently recommends that local agencies avoid siting new sensitive land uses within 500 feet of freeways or high-volume roadways (ARB 2005). The primary concern is the long-term effect of diesel exhaust particulates, a toxic air contaminant, on sensitive uses. The primary sources of diesel exhaust particulates in the project vicinity are vehicles traveling along Alamo Street and Tapo Street. Alamo Street from Tapo Canyon Road to Tapo Street has a volume of 17,800 average daily trips and Tapo Street from Alamo Street to Cochran Street has a volume of 11,700 average daily trips (Atkins, 2012). These roadways are therefore considered high volume roadways which produce pollutants near the project site.

## GREENHOUSE GAS EMISSIONS BACKGROUND

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have

observed acceleration in the rate of warming during the past 150 years. Per the United Nations Intergovernmental Panel on Climate Change (IPCC 2013), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (95 percent or greater chance) that the global average net effect of human activities has been the dominant cause of warming since the mid-20th century (IPCC 2013).

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxides ($N_2O$), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride ($SF_6$). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, $CO_2$ and $CH_4$ are emitted in the greatest quantities from human activities. Emissions of $CO_2$ are largely by-products of fossil fuel combustion, whereas $CH_4$ results from off-gassing associated with agricultural practices and landfills. Observations of $CO_2$ concentrations, globally-averaged temperature, and sea level rise are generally well within the range of the extent of the earlier IPCC projections. The recently observed increases in $CH_4$ and $N_2O$ concentrations are smaller than those assumed in the scenarios in previous assessments. Each IPCC assessment has used new projections of future climate change that have become more detailed as the models have become more advanced.

Man-made GHGs, many of which have greater heat-absorption potential than $CO_2$, include fluorinated gases and sulfur hexafluoride ($SF_6$) (California Environmental Protection Agency [CalEPA], 2006). Different types of GHGs have varying global warming potentials (GWPs). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas ($CO_2$) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" ($CO_2e$) and is the amount of a GHG emitted multiplied by its GWP. $CO_2$ has a 100-year GWP of one. By contrast, $CH_4$ has a GWP of 25, meaning its global warming effect is 25 times greater than $CO_2$ on a molecule per molecule basis (IPCC 2007).

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without the natural heat trapping effect of GHGs, Earth's surface would be about 34° Celsius (C) cooler (CalEPA, 2006). However, it is believed that emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

Greenhouse Gas Emissions Inventory

Worldwide anthropogenic emissions of GHGs were approximately 46,000 million metric tons (MMT, or gigatonne) $CO_2e$ in 2010 (IPCC, 2014). $CO_2$ emissions from fossil fuel combustion and industrial processes contributed about 65 percent of total emissions in 2010. Of anthropogenic GHGs, $CO_2$ was the most abundant, accounting for 76 percent of total 2010 emissions. $CH_4$

emissions accounted for 16 percent of the 2010 total, while $N_2O$ and fluorinated gases account for 6 and 2 percent, respectively (IPCC, 2014).

Total U.S. GHG emissions were approximately 6,525.6 MMT $CO_2e$ in 2012 (USEPA, 2014). Total U.S. emissions have increased by 4.7 percent since 1990; emissions decreased by 3.4 percent from 2011 to 2012 (USEPA, 2014). The decrease from 2011 to 2012 was due to a reduction in the carbon intensity of fuels consumed to generate electricity due to a decrease in coal consumption, with increased natural gas consumption. Additionally, relatively mild winter conditions, especially in regions of the United States where electricity is important for heating, resulted in an overall decrease in electricity demand in most sectors. Since 1990, U.S. emissions have increased at an average annual rate of 0.2 percent. In 2012, the transportation and industrial end-use sectors accounted for 28.2 percent and 27.9 percent of $CO_2$ emissions (with electricity-related emissions distributed), respectively. Meanwhile, the residential and commercial end-use sectors accounted for 16.3 percent and 16.4 percent of $CO_2$ emissions, respectively (USEPA, 2014).

Based upon the ARB California Greenhouse Gas Inventory for 2000-2013, California produced 459.3 MMT of $CO_2e$ in 2013 (ARB, 2015). The major source of GHG in California is transportation, contributing 37 percent of the state's total GHG emissions. Industrial sources are the second largest source of the state's GHG emissions (ARB, 2015). California emissions are due in part to its large size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. The ARB has statewide unregulated GHG emissions projected for the year 2020 at 509.4 MMT $CO_2e$ (ARB, 2014). These projections represent the emissions that would be expected to occur in the absence of any GHG reduction actions.

Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Long-term trends have found that each of the past three decades has been warmer than all the previous decades in the instrumental record and the decade from 2000 through 2010 has been the warmest. The global combined land and ocean temperature data show an increase of about 0.89°C (0.69°C–1.08°C) over the period 1901–2012 and about 0.72°C (0.49°C–0.89°C) over the period 1951–2012 when described by a linear trend. Several independently analyzed data records of global and regional Land-Surface Air Temperature (LSAT) obtained from station observations are in agreement that LSAT as well as sea surface temperatures have increased. In addition to these findings, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades (IPCC, 2013).

According to the CalEPA's 2010 *Climate Action Team Biennial Report*, potential impacts of climate change in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CalEPA, 2010). Below is a summary of some of the potential effects that could be experienced in California as a result of climate change.

*Air Quality*

Higher temperatures, which are conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect and therefore its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (California Energy Commission [CEC] 2009).

*Water Supply*
Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future water supplies in California. However, the average early spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage. During the same period, sea level rose eight inches along California's coast. California's temperature has risen 1° Fahrenheit (F) mostly at night and during the winter, with higher elevations experiencing the highest increase. Many Southern California cities have experienced their lowest recorded annual precipitation twice within the past decade. In a span of only two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR] 2008; California Climate Change Center [CCCC] 2009).

This uncertainty complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The Sierra snowpack provides the majority of California's water supply by accumulating snow during the state's wet winters and releasing it slowly during the state's dry springs and summers. Based upon historical data and modeling, DWR projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050. Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack (DWR, 2008).

*Hydrology and Sea Level Rise*
As discussed above, climate change could potentially affect: the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. According to *The Impacts of Sea-Level Rise on the California Coast*, prepared by the California Climate Change Center (CCCC) (CCCC, 2009), climate change has the potential to induce substantial sea level rise in the coming century. The rising sea level increases the likelihood and risk of flooding. The rate of rising global mean sea levels over the 2001-2010 decade, as observed by satellites, ocean buoys and land gauges, was approximately 3.2 mm per year, which is double the observed 20th century trend of 1.6 mm per year (World Meteorological Organization [WMO], 2013). As a result, sea levels averaged over the last decade were about 8 inches higher than those of 1880 (WMO, 2013). Sea levels are rising faster now than in the previous two millennia, and the rise is expected to accelerate, even

with robust GHG emission control measures. The most recent IPCC report (2013) predicts a mean sea–level rise of 11-38 inches by 2100. This prediction is more than 50 percent higher than earlier projections of 7-23 inches, when comparing the same emissions scenarios and time periods. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply due to salt water intrusion. In addition, increased $CO_2$ emissions can cause oceans to acidify due to the carbonic acid it forms. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

*Agriculture*
California has a $30 billion annual agricultural industry that produces half of the country's fruits and vegetables. Higher $CO_2$ levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater air pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (CCCC, 2006).

*Ecosystems and Wildlife*
Climate change and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists project that the average global surface temperature could rise by 1.0-4.5°F (0.6-2.5°C) in the next 50 years and 2.2-10°F (1.4-5.8°C) in the next century, with substantial regional variation. Soil moisture is likely to decline in many regions and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan, 2006).

## Local Regulations and CEQA Requirements

Federal Regulations
The United States Supreme Court in Massachusetts et al. v. Environmental Protection Agency et al. ([2007] 549 U.S. 05-1120) held that the USEPA has the authority to regulate motor-vehicle GHG emissions under the federal Clean Air Act.

The USEPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines and requires annual reporting of emissions. The first annual reports for these sources were due in March 2011.

On May 13, 2010, the USEPA issued a Final Rule that took effect on January 2, 2011, setting a threshold of 75,000 tons $CO_2e$ per year for GHG emissions. New and existing industrial facilities that meet or exceed that threshold will require a permit after that date. On November 10, 2010, the USEPA published the "Prevention of Significant Deterioration and Title V Permitting Guidance for Greenhouse Gases." The USEPA's guidance document is directed at state agencies responsible for

air pollution permits under the Federal Clean Air Act to help them understand how to implement GHG reduction requirements while mitigating costs for industry.

On January 2, 2011, the USEPA implemented the first phase of the Tailoring Rule for GHG emissions Title V Permitting. Under the first phase of the Tailoring Rule, all new sources of emissions are subject to GHG Title V permitting if they are otherwise subject to Title V for another air pollutant and they emit at least 75,000 tons $CO_2e$ per year. Under Phase 1, no sources were required to obtain a Title V permit solely due to GHG emissions. Phase 2 of the Tailoring Rule went into effect July 1, 2011. At that time new sources were subject to GHG Title V permitting if the source emits 100,000 tons $CO_2e$ per year, or they are otherwise subject to Title V permitting for another pollutant and emit at least 75,000 tons $CO_2e$ per year.

On July 3, 2012 the USEPA issued the final rule that retains the GHG permitting thresholds that were established in Phases 1 and 2 of the GHG Tailoring Rule. These emission thresholds determine when Clean Air Act permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities.

California Regulations

ARB is responsible for the coordination and oversight of State and local air pollution control programs in California. California has numerous regulations aimed at reducing the state's GHG emissions. These initiatives are summarized below.

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires ARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, USEPA granted the waiver of Clean Air Act preemption to California for its GHG standards for motor vehicles beginning with the 2009 model year. Pavley I took effect for model years starting in 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" will cover 2017 to 2025. Fleet average emission standards would reach 22 percent reduction from 2009 levels by 2012 and 30 percent by 2016. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles (LEV), Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs and would provide major reductions in GHG emissions. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels (ARB, 2011).

In 2005, the governor issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent below 1990 levels (CalEPA, 2006). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA, 2006). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These are strategies that could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel

trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, landfill methane capture, and more.

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006," signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 (essentially a 15 percent reduction below 2005 emission levels, the same requirement as under S-3-05), and requires ARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires ARB to adopt regulations to require reporting and verification of statewide GHG emissions.

After completing a comprehensive review and update process, ARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT $CO_2e$. The Scoping Plan was approved by ARB on December 11, 2008, and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted over the last five years.

On September 8, 2016, the governor signed Senate Bill 32 (SB 32) into law, extending AB 32 by requiring the State to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently adopted policies and policies. The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally-appropriate quantitative thresholds consistent with a statewide per capita goal of six metric tons (MT) $CO_2e$ by 2030 and two MT $CO_2e$ by 2050 (CARB, 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, subregional, or regional level), but not for specific individual projects because they include all emissions sectors in the State.

In May 2014, ARB approved the first update to the AB 32 Scoping Plan. The 2013 Scoping Plan update defines ARB's climate change priorities for the next five years and sets the groundwork to reach post-2020 goals set forth in EO S-3-05. The update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluates how to align the State's longer-term GHG reduction strategies with other State policy priorities, such as for water, waste, natural resources, clean energy and transportation, and land use (ARB, 2014).

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in CEQA documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

ARB Resolution 07-54 establishes 25,000 MT of GHG emissions as the threshold for identifying the largest stationary emission sources in California for purposes of requiring the annual reporting of emissions. This threshold is just over 0.005 percent of California's total inventory of GHG emissions for 2004.

Senate Bill (SB) 375, signed in August 2008, enhances the state's ability to reach AB 32 goals by directing ARB to develop regional GHG emission reduction targets to be achieved from vehicles for 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPO) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On September 23, 2010, ARB adopted final regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. The Southern California Association of Governments (SCAG) was assigned targets of an 8 percent reduction in GHGs from transportation sources by 2020 and a 13 percent reduction in GHGs from transportation sources by 2035. In the SCAG region, SB 375 also provides the option for the coordinated development of subregional plans by the subregional councils of governments and the county transportation commissions to meet SB 375 requirements."

In April 2011, the governor signed SB 2X requiring California to generate 33 percent of its electricity from renewable energy by 2020. Executive Order B-30-15, signed by the governor in April 2015, establishes a new interim statewide greenhouse gas emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80% below 1990 levels by 2050. SB 350 was adopted in October 2015, setting goals of generating 50% of California's electricity from renewable power sources and doubling energy efficiency in existing buildings, all by 2030.

For more information on the Senate and Assembly Bills, Executive Orders, and reports discussed above, and to view reports and research referenced above, please refer to the following websites: www.climatechange.ca.gov and www.arb.ca.gov/cc/cc.htm.

*California Environmental Quality Act*

Pursuant to the requirements of SB 97, the Natural Resources Agency has adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. As noted previously, the adopted CEQA Guidelines provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, the Bay Area Air Quality Management District (BAAQMD), the South Coast Air Quality Management District (SCAQMD), the San Luis Obispo Air Pollution Control District (SLOAPCD), and the San Joaquin Air Pollution Control District (SJVAPCD) have adopted quantitative significance thresholds for GHGs. However, the BAAQMD was ordered to set aside the thresholds in March 2012 by the Alameda County Superior Court and is no longer recommending that these thresholds be used as a general measure of a project's significant air quality impacts. In August 2013, the First District Court of Appeal overturned the trial court and held that the thresholds of significance adopted by the BAAQMD were not subject to CEQA review. The California Supreme Court has agreed to hear an appeal of this case. The case is currently being briefed and

the matter is still pending. Thus, BAAQMD will not issue a further recommendation until this litigation is complete

Local Regulations

SCAG adopted a Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) that applies to the County of Ventura in April 2016. The following long term implementation programs and policies are included in the SCS:

- Long-term emission-reduction investments for trucks and rail
- Unfunded operational improvements
- Unfunded capital improvements
- Expansion of our region's high-speed rail and commuter rail systems
- Increased use of active transportation
- Technology and new mobility innovations
- Expansion of the regional network of express lanes

The City of Simi Valley has developed a Greenhouse Gas Inventory Policy to account for GHG emissions based on established GHG principles and a Climate Action Plan (CAP), which was adopted on June 4, 2012. The CAP was prepared to reduce and encourage reductions in GHG emissions from all sectors within the City. The City's goal is to reduce GHG emissions by 15 percent by 2020 as compared to a 2006 baseline. The City compares and collects GHG emissions data for its municipal operations and tracks county-wide GHG emissions (Simi Valley, 2012). An indicator of the success of these efforts is a measured reduction in GHG emissions using protocols discussed in the CAP. No specific GHG emission thresholds of significance are included in the CAP or GHG Inventory Policy.

# SIGNIFICANCE THRESHOLDS AND METHODOLOGY

## Air Quality Thresholds

To determine whether a project would have a significant impact to air quality, Appendix G of the *CEQA Guidelines* asks whether a project would:

a) *Conflict with or obstruct implementation of the applicable air quality plan;*
b) *Violate any air quality standard or contribute substantially to an existing or projected air quality violation;*
c) *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);*
d) *Expose sensitive receptors to substantial pollutant concentrations; or*
e) *Create objectionable odors affecting a substantial number of people.*

The most recent VCAPCD comprehensive publication regarding air quality assessment is the *Ventura County Air Quality Assessment Guidelines* (Guidelines) (2003). The Guidelines recommend significance thresholds for projects proposed in Ventura County. As outlined in the Guidelines, impacts are considered significant if a project would:

- *Generate daily emissions exceeding 25 pounds of reactive organic compounds (ROG) or nitrogen oxides ($NO_X$)*
- *Be inconsistent with goals and policies of the Ventura County AQMP*
- *Create a human health hazard by exposing sensitive receptors to toxic air emissions*
- *Create objectionable odors affecting a substantial number of people*
- *Cause an exceedance or make a substantial contribution to an exceedance of an ambient air quality standard*[2]
- *Directly or indirectly cause the existing population to exceed the population forecasts in the most recently adopted AQMP*

According to the Guidelines, projects that generate more than 25 pounds per day of ROG and $NO_X$ may jeopardize attainment of the federal and State ozone standard, resulting in a significant impact on air quality. The 25 pounds per day threshold for ROG and $NO_X$ are not intended to be applied to construction emissions since such emissions are temporary.

The VCAPCD has not established quantitative thresholds for particulate matter for either operation or construction. However, the VCAPCD indicates that a project that may generate fugitive dust emissions in such quantities as to cause injury, detriment, nuisance, or annoyance to any considerable number of persons, or which may endanger the comfort, repose, health, or safety of any such person, or which may cause or have a natural tendency to cause injury or damage to business or property would have a significant air quality impact. This threshold is particularly applicable to the generation of fugitive dust during construction grading operations.

Carbon Monoxide Hotspots

A CO hotspot is a localized concentration of CO that is above the State or national 1-hour or eight hour CO ambient air standards. Localized CO "hotspots" can occur at intersections with heavy peak hour traffic. Specifically, hotspots can be created at intersections where traffic levels are sufficiently high such that the local CO concentration exceeds the federal AAQS of 35.0 parts per million (ppm) or the State AAQS of 20.0 ppm.

According to the VCAPCD Ventura County Air Quality Assessment Guidelines, a CO screening analysis should be conducted for intersections that would be significantly affected by a project and that experience, or are anticipated to experience, level of service (LOS) E or F. "Hot spots" are defined as locations where local ambient CO concentrations exceed the state or federal ambient air quality standards (SCAQMD, 1993).

## Greenhouse Gas Emissions Thresholds

To determine whether a project would have a significant impact to greenhouse gases, Appendix G of the *CEQA Guidelines* asks whether a project would:

[2] *"Substantial" is defined as making measurably worse an existing exceedance. Since the VCAPCD does not provide a numerical value for "substantial contribution," changes in carbon monoxide concentrations were determined to be significant and substantial for this analysis if concentrations including project traffic caused an exceedance of the California one-hour standard of 20 parts per million (ppm) carbon monoxide or the federal and state eight-hour standard of 9.0 (ppm) is exceeded. This latter standard follows the South Coast Air Quality Management District (SCAQMD) definition of significance for CO impacts (SCAQMD. Revised March 2011).*

a) *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment or*
b) *Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.*

The vast majority of individual projects do not generate sufficient GHG emissions to create a project-specific impact through a direct influence to climate change; therefore, the issue of climate change typically involves an analysis of whether a project's contribution toward an impact is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (*CEQA Guidelines*, Section 15355).

Given that Ventura County is adjacent to the SCAQMD jurisdiction and is part of the Southern California Association of Governments (SCAG) region, the VCAPCD recommends use of GHG emission thresholds of significance for land use development projects at levels consistent with those set by the SCAQMD (VCAPCD, 2011). According to the SCAQMD, a project would not have significant GHG emissions if the project is consistent with a GHG reduction plan that may be part of a local general plan (SCAQMD, "Proposed Tier 2 Threshold, September 2010). The CAP was formally adopted into the City's General Plan on June 4, 2012. Therefore, for the purpose of this analysis, the project would have a less than significant impact on GHG emissions, if it is consistent with the City's CAP. The project's operational and construction GHG emissions are also quantified, for informational purposes.

## Air Quality Analysis Methodology

Construction Emissions Estimates

As discussed above, the VCAPD does not recommend any thresholds of significance for construction emissions; therefore, significance is determined based on a consideration of the control measures to be implemented. The California Emissions Estimator Model (CalEEMod) version 2016.3.2 was used to estimate construction emissions. CalEEMod was developed by SCAQMD and is used by jurisdictions throughout the state to quantify criteria pollutant emissions.

Maximum daily pollutant emissions include emissions from worker trips, hauling trips, construction vehicle emissions and fugitive dust from Site Preparation, Grading, Paving, Building construction, and Architectural Coating phases. Emissions include worker trips, hauling trips, construction vehicle emissions, and fugitive dust. Several assumptions were applied to CalEEMod including 70,000 square feet of demolition of existing buildings and balanced grading on-site with no soil export or import. Approximately 0.6 acres would not be graded as part of the proposed project reducing grading on the project site from 6.88 acres to 6.28 acres. VCAPCD Rule 74.2, Architectural Coatings, was applied to CalEEMod and all volatile organic compounds (VOC) were assumed to be 150 grams per liter. Additionally, Rule 55 was applied to CalEEMod for watering the construction site twice a day.

Operational Emissions

CalEEMod was also used to estimate the project's operational emissions. Operational emissions include mobile source emissions, energy emissions, and area source emissions. Mobile source

emissions are generated by the increase in motor vehicle trips to and from the project site associated with operation of on-site development. Trip generation estimates were based on land use descriptions in Institute of Transportation Engineers (ITE) Trip Generation 8th Edition. Emissions attributed to energy use include natural gas consumption for space and water heating. Area source emissions are generated by landscape maintenance equipment, consumer products and architectural coating. For a conservative estimation emissions on the project site from existing development, that would be removed as part of the project, were not considered in the analysis. To determine whether a regional air quality impact would occur, the project's increase in emissions were compared to the VCAPD's recommended regional thresholds for operational emissions.

## Greenhouse Gas Emissions Analysis Methodology

The proposed project was compared to applicable strategies in the City's CAP to determine the projects significance. However, the project's operational and construction GHG emissions were also quantified, as discussed below, for informational purposes.

Calculations of $CO_2$, $CH_4$, and $N_2O$ emissions are provided to identify the magnitude of potential project effects for informational purposes only. The analysis focuses on $CO_2$, $CH_4$, and $N_2O$ because these make up 98.9 percent of all GHG emissions by volume (IPCC, 2007) and are the GHG emissions that the project would emit in the largest quantities. Fluorinated gases, such as HFCs, PFCs, and $SF_6$, were also considered for the analysis. However, emissions of fluorinated gases are primarily associated with industrial processes; because the project involves mixed-use development, the quantity of fluorinated gases would be minimal. Emissions of all GHGs are converted into their $CO_2e$ Minimal amounts of other main GHGs (such as chlorofluorocarbons [CFCs]) would be emitted, and these other GHG emissions would not substantially add to the calculated $CO_2e$ amounts. Calculations are based on the methodologies discussed in the California Air Pollution Control Officers Association (CAPCOA) *CEQA and Climate Change* white paper (2008) and included the use of the California Climate Action Registry (CCAR) General Reporting Protocol (2009).

This analysis calculates GHG emissions by quantifying the project's amenities and design features and also takes into account current state and federal measures that are intended to reduce GHG emissions. State and federal measures that are built into the emissions model calculation include Title 24 Energy Standards, Pavley (Clean Car Standards) and Low Carbon Fuel Standards.

Construction Emissions

Although construction activity is addressed in this analysis, CAPCOA does not discuss whether any of the suggested threshold approaches adequately address impacts from temporary construction activity. As stated in the *CEQA and Climate Change* white paper, "more study is needed to make this assessment or to develop separate thresholds for construction activity" (CAPCOA, 2008). As discussed above, following VCAPCD's guidance this analysis follows SCAQMD's recommended GHG thresholds; therefore, construction-related emissions are amortized over a 30-year period, which is recommended by SCAQMD (2010).

On-site Operational Emissions

Operational emissions from energy use (electricity and natural gas use) for the project were estimated using CalEEMod (see Appendix for CalEEMod results). The default values on which CalEEMod are based include the CEC sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies. CalEEMod provides operational emissions of $CO_2$, $N_2O$ and $CH_4$. This methodology is considered reasonable and reliable for use, as it has been subjected to peer review by numerous public and private stakeholders, and in particular by the CEC. It is also recommended by CAPCOA (2008). For a conservative estimation emissions on the project site from existing development, that would be removed as part of the project, were not considered in the analysis.

Operational emissions include area sources (consumer products, landscape maintenance equipment, and painting), energy use (electricity and natural gas), solid waste, electricity to deliver water, and transportation emissions. In accordance with AB 939, it was assumed that the project would achieve at least a 50 percent waste diversion rate. CalEEMod does not calculate $N_2O$ emissions related to mobile sources. As such, $N_2O$ emissions were calculated based on the project's VMT using calculation methods provided by the California Climate Action Registry General Reporting Protocol (2009) (See Appendix for calculations).
Emissions associated with area sources, including consumer products, landscape maintenance, and architectural coating were calculated in CalEEMod and utilize standard emission rates from ARB, USEPA, and district supplied emission factor values (CAPCOA, 2017).

Emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste (CAPCOA, 2017). Waste disposal rates by land use and overall composition of municipal solid waste in California was primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle).

Emissions from water and wastewater usage calculated in CalEEMod were based on the default electricity intensity from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Northern and Southern California.

Direct Emissions from Mobile Combustion
Emissions of $CO_2$ and $CH_4$ from transportation sources for the project s were quantified using CalEEMod. Because CalEEMod does not calculate $N_2O$ emissions from mobile sources, $N_2O$ emissions were quantified using the California Climate Action Registry General Reporting Protocol (2009) direct emissions factors for mobile combustion (see Appendix for calculations). The estimate of total daily trips, associated with development of the project, was based on the project trip generation study (LSA, 2018). Total vehicle trips generated by the project were then calculated and extrapolated to derive total annual mileage in CalEEMod. Emission rates for $N_2O$ emissions were based on the vehicle mix output generated by CalEEMod and the emission factors found in the California Climate Action Registry General Reporting Protocol.

# IMPACT ANALYSIS

## Air Quality Impacts

Construction Impacts

Construction of the project would generate temporary air pollutant emissions. These impacts are associated with fugitive dust ($PM_{10}$ and $PM_{2.5}$) and exhaust emissions from heavy duty construction vehicles and soil hauling trucks, in addition to ROG that would be released during the drying phase upon application of architectural coatings. Construction would generally consist of site preparation, grading, erection of the proposed buildings, paving, and architectural coating.

The site preparation and grading phases involve the greatest amount of heavy equipment and the greatest generation of fugitive dust. Significant construction-related air quality impacts result if fugitive dust emissions are generated in such quantities as to cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or safety of any such person or the public. Table 3 summarizes maximum daily pollutant emissions from project construction (see Appendix for CalEEMod results).

**Table 3**
**Construction Maximum Daily Air Pollutant Emissions (lbs/day)**

| Construction Year | Estimated Emissions (lbs/day) | | | |
|---|---|---|---|---|
| | ROG | $NO_x$ | $PM_{10}$ | $PM_{2.5}$ |
| 2018 Maximum lbs/day | 5.2 | 59.6 | 10.9 | 6.9 |
| 2019 Maximum lbs/day | 49.1 | 33.2 | 5.0 | 2.4 |

*Notes: All calculations were made using CalEEMod. See the Appendix for results.*

The VCAPCD's 25 pounds per day thresholds for ROG and $NO_X$ are not intended to be applied to construction emissions since such emissions are temporary. Nevertheless, for construction impacts, the VCAPCD recommends minimizing fugitive dust through dust control measures. Fugitive Dust control measures are required by VCAPCD Rule 55. Rule 55 includes fugitive dust reduction measures such as securing tarps over truck loads and watering to treat bulk material to minimize fugitive dust. For architectural coating VCAPCD requires VOC content limits under Rule 74.2 for specific coating categories. Compliance with Rule 55 and Rule 74.2 would ensure that construction emissions would not be generated in such quantities as to cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or safety of any such person or the public.

Operational Impacts

Operational emissions associated with the project were estimated using CalEEMod. The increase in long-term operational emissions associated with the project is shown in Table 4.

**Table 4**
**Maximum Daily Operational Emissions (lbs/day)**

| Emission Source | ROG | $NO_X$ | CO | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|
| Area | 9.2 | 0.3 | 23.1 | 0.1 | 0.1 |
| Energy | 0.1 | 0.8 | 0.3 | 0.1 | 0.1 |
| Mobile | 4.3 | 18.2 | 53.8 | 12.3 | 3.4 |
| **Total Project Emissions** | **13.6** | **19.2** | **77.2** | **12.5** | **3.6** |
| *VCAPCD Thresholds* | *25* | *25* | *N/A* | *N/A* | *N/A* |
| *Threshold Exceeded?* | *No* | *No* | *N/A* | *N/A* | *N/A* |

*Source: See Appendix for CalEEMod calculations. Note: Totals may not add up due to rounding.*

As shown in Table 4, emissions would not exceed the VCAPCD thresholds for ROG or $NO_X$. Therefore, air quality impacts associated with operation of the project would be less than significant.

Carbon Monoxide Hotspot Analysis

Areas with high vehicle density, such as congested intersections, have the potential to create high concentrations of CO, known as CO hotspots. A project's localized air quality impact is considered significant if CO emissions create a hotspot where either the California one-hour standard of 20 ppm or the federal and state eight-hour standard of 9.0 ppm is exceeded. This typically occurs at severely congested intersections (level of service [LOS] E or worse). Existing on-site development generates an estimated 1,179 vehicles per day (LSA, 2018). Based on trip rates from the project trip generation study, the project would generate 3,123 vehicle trips per day; 1,944 additional vehicle trips compared to the project site's existing use. The project would not reduce the LOS at area intersections under both AM and PM peak hour conditions (LSA Associates Inc., 2018). Therefore, the project would not result in a CO hotspot.

Toxic Air Contaminants

ARB's *Air Quality and Land Use Handbook: A Community Health Perspective* (April 2005) recommends against siting sensitive receptors within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day. The project site is approximately 1,670 feet north of State Route 118. Alamo Street and Tapo Street are adjacent to the project site. Alamo Street from Tapo Canyon Road to Tapo Street currently experiences a volume of 17,800 vehicle trips per day and Tapo Street from Alamo Street to Cochran Street currently experiences a volume of 11,700 vehicle trips per day (Atkins, 2012). Therefore, the project would not site sensitive receptors within 500 feet of a freeway or an urban road with 100,000 vehicles per day; therefore, the project would not create a human health hazard by exposing sensitive receptors to substantial pollutant concentrations.

The project would increase the daily trip rate in the project vicinity by 1,944 vehicles per day during project operation. An increase in 1,944 vehicle trips in the project vicinity would not increase vehicle traffic on area roadways to 100,000 vehicles (LSA, 2018). Traffic generated by

the project would not expose existing sensitive receptors to substantial pollutant concentrations or create a significant health risk to local sensitive receptors.

Odors

According to the *SCAQMD CEQA Air Quality Handbook*, land uses typically producing objectionable odors include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The project includes residential uses, which are not listed by the SCAQMD as a land use that produces objectionable odors. Other odors, including the smells of oil or diesel fuels, would be limited to project construction. All off-road construction equipment would be covered by the ARB anti-idling rule (SS2449(d)(2)), which limits idling to five minutes. Project construction would be temporary and would not produce odors long term. Therefore, the project would not generate objectionable odors affecting a substantial number of people and impacts would be less than significant.

AQMP Consistency

The VCAPCD Guidelines state that project consistency with the AQMP can be determined by comparing the actual population growth in the county with the projected growth rates used in the AQMP. However, if there are more recent population forecasts that have been adopted by the Ventura Council of Governments (VCOG) where the total county population is lower than that included in the most recently adopted AQMP population forecasts, lead agencies may use the more recent VCOG forecasts for determining AQMP consistency.

The Ventura County 2016 population is estimated at 856,508 a 0.7 percent growth increase from 2015 (California Department of Finance [DOF], 2016). VCOG estimates that the population will increase to 995,375 by 2040, an increase in approximately 138,867 residents. The project involves the development of 278 residential units. Using an average household size of 3.0 persons (VCOG, 2008) about 834 residents would be added to Simi Valley as a result of the project. The addition of 834 new residents would increase the Ventura County population to 857,342 residents, which falls within the population growth forecast for Ventura County. The project would account for less than 1 percent of Ventura County's projected population growth. Therefore, the project would not generate growth exceeding the VCOG projected population growth forecast and would comply with the AQMP.

## Greenhouse Gas Emissions Impacts

Construction Emissions

As shown in Table 5, $CO_2e$ emissions generated by construction of the project are estimated to be approximately 925 metric tons. Air districts such as the SCAQMD (2010) have recommended amortizing construction-related emissions over a 30-year period in conjunction with the project's operational emissions. When amortized over a 30-year period (the assumed life of the project), $CO_2e$ construction emissions would be about 31 metric tons per year.

**Table 5**
**Estimated Construction Emissions of Greenhouse Gases**

| | **Annual Emissions (Carbon Dioxide Equivalent [$CO_2e$])** |
|---|---|
| Total | 924.8 metric tons |
| **Amortized over 30 years** | **30.8 metric tons per year** |

*Source: Calculations were made in CalEEMod, see Appendix for full model output.*

Operational Indirect and Stationary Direct Emissions

Operational GHG emissions associated with the project were estimated using CalEEMod. Table 6 shows the project GHG emissions and indicates that the project would generate approximately 3,472 metric tons $CO_2e$ per year from operational and mobile emissions.

**Table 6**
**Long-Term Annual Emissions of Greenhouse Gases**

| **Emission Source** | **Annual Emissions MT $CO_2e$** |
|---|---|
| Operational | |
| Area | 3.5 |
| Energy | 928.4 |
| Solid Waste | 32.2 |
| Water | 68.8 |
| Mobile | |
| $CH_4$ and $CO_2$ | 2,318.5 |
| $N_2O$ | 120.7 |
| **Total Project Operational Emissions** | *3,472.1* |

*Sources: See Appendix for calculations. Note: Total may not add up due to rounding.*

Table 7 summarizes the combined emissions associated with construction and operation of the project. The project would increase GHG emissions by approximately 3,503 metric tons of $CO_2e$ per year.

**Table 7**
**Combined Annual Emissions of Greenhouse Gases**

| **Emission Source** | **Annual Emissions MT $CO_2e$** |
|---|---|
| Construction | 30.8 |
| Operation | 1,032.9 |
| Mobile | 2,439.2 |
| **Total Project Emissions** | **3,502.9** |

*Sources: See Appendix for calculations and for GHG emission factor assumptions. Assumed compliance with SCAQMD Fugitive Dust Rule 403 and SCAQMD Architectural Coating Rule 1113.*

*Note: Total may not add up due to rounding.*

Consistency with GHG Reduction Plans & Policies

As discussed under "Greenhouse Gas Emissions Thresholds," the City of Simi Valley has adopted a goal to reduce its community GHG emissions to a 15 percent below its 2006 GHG emissions levels by 2020 as part of the City's Greenhouse Gas Reduction Plan, adopted on June 4, 2012. The proposed project's consistency with local measures is described in Table 8.

**Table 8**
**Project Consistency with City of Simi Valley Climate Action Plan**

| ***Strategy*** | ***Project Consistency*** |
|---|---|
| **Energy Reduction Measures** | |
| ***R2-E1***<br>Residential Energy Efficiency Program<br><br>***R2-E5***<br>Commercial Energy Efficiency Program | **Consistent**<br>The project would be required to comply with the Title 24 standards for Building Energy Efficiency that are in effect at the time of development. These standards include actions such as insulation certified by the Department of Consumer Affairs, Bureau of Home Furnishing and Thermal Insulation to reduce energy necessary to regulate building temperature and natural gas systems only installed if they do not have a continuously burning pilot light, to save energy. |
| ***R2-E8***<br>Water Use Reduction Initiative | **Consistent**<br>The project would be required to comply with the City's water use restrictions on time, area, frequency, and duration of specified allowable water usages. The project also includes drought tolerant landscaping throughout the project site, which would further reduce water use. |
| ***Solid Waste*** | |
| ***R2-W1***<br>City Diversion Program | **Consistent**<br>The project would comply with current City of Simi Valley solid waste diversion programs and include recycling infrastructure as part of the project. |
| ***Transportation*** | |
| ***R2-T1***<br>Anti-Idling Enforcement | **Consistent**<br>Current State law restricts diesel truck idling to five minutes or less. Diesel trucks operating from and making deliveries to the project site are subject to this state-wide law. Construction vehicles are also subject to this regulation. |

As discussed under "Greenhouse Gas Emissions Background," the 2006 CAT Report identified a recommended list of strategies that the State could pursue to reduce GHG emissions. The strategies include the reduction of passenger and light duty truck emissions, reduction of energy and water use and increased recycling. The project would be consistent with or would not conflict with objectives of the CAT report, shown in Table 9.

## Table 9
## Project Consistency with Applicable Climate Action Team Greenhouse Gas Emission Reduction Strategies

| ***Strategy*** | ***Project Consistency*** |
|---|---|
| **California Air Resources Board** | |
| ***Vehicle Climate Change Standards***<br>AB 1493 (Pavley) required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by the ARB in September 2004. | **Consistent**<br>Vehicles that travel to and from the project site on public roadways would be in compliance with ARB vehicle standards that are in effect at the time of vehicle purchase. |
| ***Diesel Anti-Idling***<br>The ARB adopted a measure to limit diesel-fueled commercial motor vehicle idling in July 2004. | **Consistent**<br>Current State law restricts diesel truck idling to five minutes or less. Diesel trucks operating from and making deliveries to the project site are subject to this state-wide law. Construction vehicles are also subject to this regulation. |
| ***Alternative Fuels: Biodiesel Blends***<br>ARB would develop regulations to require the use of 1 to 4% biodiesel displacement of California diesel fuel. | **Consistent**<br>The diesel vehicles such as construction vehicles that travel to and from the project site on public roadways could utilize this fuel once it is commercially available. The nearest biodiesel station is located at 6417 Ventura Boulevard approximately 25 miles east of the project site. |
| ***Alternative Fuels: Ethanol***<br>Increased use of E-85 fuel. | **Not Applicable**<br>The project is a residential/retail project. Additionally, vehicles could use E-85 fuel located 25 miles east of the project site located at 6417 Ventura Boulevard. |
| ***Heavy-Duty Vehicle Emission Reduction Measures***<br>Increased efficiency in the design of heavy duty vehicles and an education program for the heavy duty vehicle sector. | **Consistent**<br>Heavy-duty vehicles for construction activities that travel to and from the project site on public roadways would be subject to all applicable ARB efficiency standards that are in effect at the time of vehicle manufacture. |
| **Department of Forestry** | |
| ***Urban Forestry***<br>A new statewide goal of planting 5 million trees in urban areas by 2020 would be achieved through the expansion of local urban forestry programs. | **Consistent**<br>The project would not interfere with the statewide goal of planting trees. |
| **Energy Commission (CEC)** | |
| ***Building Energy Efficiency Standards in Place and in Progress***<br>Public Resources Code 25402 authorizes the CEC to adopt and periodically update its building energy efficiency standards (that apply to newly constructed buildings and additions to and alterations to existing buildings). | **Consistent**<br>The project would be required to comply with the Title 24 standards for Building Energy Efficiency that are in effect at the time of development. These standards include actions such as insulation certified by the Department of Consumer Affairs, Bureau of Home Furnishing and Thermal Insulation to reduce energy necessary to regulate building temperature and natural gas systems only installed if they do not have a continuously burning pilot light, to save energy. |
| ***Appliance Energy Efficiency Standards in Place and in Progress***<br>Public Resources Code 25402 authorizes the Energy Commission to adopt and periodically | **Consistent**<br>Under State law, appliances that are purchased for the project - both pre- and post-development – would be consistent with energy efficiency standards that are in effect at the time of |

## Table 9
## Project Consistency with Applicable Climate Action Team Greenhouse Gas Emission Reduction Strategies

| ***Strategy*** | ***Project Consistency*** |
|---|---|
| update its appliance energy efficiency standards (that apply to devices and equipment using energy that are sold or offered for sale in California). | manufacture. |
| ***Fuel-Efficient Replacement Tires & Inflation Programs***<br>State legislation established a statewide program to encourage the production and use of more efficient tires. | **Not Applicable**<br>This is a residential/retail project and would not require fuel-efficient replacement tires and inflation programs. |
| ***Municipal Utility Renewable Portfolio Standard***<br>California's Renewable Portfolio Standard (RPS), established in 2002, requires that all load serving entities achieve a goal of 20% of retail electricity sales from renewable energy sources by 2017, within certain cost constraints. | **Not applicable**<br>The project would not preclude implementation of this strategy by Southern California Edison. |
| ***Municipal Utility Combined Heat and Power***<br>Cost effective reduction from fossil fuel consumption in the commercial and industrial sector through the application of on-site power production to meet both heat and electricity loads. | **Not applicable**<br>Project development would not preclude the implementation of this strategy by the municipality. |
| ***Alternative Fuels: Non-Petroleum Fuels***<br>Increasing the use of non-petroleum fuels in California's transportation sector, as recommended as recommended in the CEC's 2003 and 2005 Integrated Energy Policy Reports. | **Not Applicable**<br>This is a residential/retail project and would not require the use of alternative non-petroleum fuels. |
| **Public Utilities Commission (PUC)** | |
| Accelerated Renewable Portfolio Standard<br>The Governor has set a goal of achieving 33% renewable in the State's resource mix by 2020. The joint PUC/Energy Commission September 2005 Energy Action Plan II (EAP II) adopts the 33% goal. | **Not applicable**<br>Project development would not preclude the implementation of this strategy by energy providers. |
| Explore and implement innovative strategies and projects that enhance mobility and air quality, including those that increase the walkability of communities and accessibility to transit via non-auto modes, including walking, bicycling, and neighborhood electric vehicles (NEVs) or other alternative fueled vehicles. | **Consistent**<br>The project site is located in an urbanized area with sidewalks, large road shoulders for bicycles, and in proximity to existing residential and commercial development |
| Collaborate with local jurisdictions to plan and develop residential and employment development around current and planned transit stations and neighborhood commercial centers. | **Consistent**<br>As discussed above, the project site is located in an urbanized area with sidewalks, large road shoulders for bicycles, and in proximity to existing commercial centers. The project would not conflict with efforts to support the use of public transportation. |
| Develop first-mile/last-mile strategies on a local level to provide an incentive for making trips by transit, bicycling, walking, or neighborhood electric vehicle or other ZEV options. | **Consistent**<br>As discussed above, the project site is located in an urbanized area with sidewalks, large road shoulders for bicycles, and in proximity to existing residential and commercial development. |

**Table 9**
**Project Consistency with Applicable Climate Action Team**
**Greenhouse Gas Emission Reduction Strategies**

| ***Strategy*** | ***Project Consistency*** |
|---|---|
| **Transportation Demand Management Actions and Strategies** | |
| Support work-based programs that encourage emission reduction strategies and incentivize active transportation commuting or ride-share modes. | **Not applicable**<br>The project is a residential/retail project. Residents could participate in ridesharing or other commuting programs, such as bicycling, intended to reduce emissions from motor vehicles. |
| **Clean Vehicle Technology Actions and Strategies** | |
| Develop a Regional PEV Readiness Plan with a focus on charge port infrastructure plans to support and promote the introduction of electric and other alternative fuel vehicles in Southern California. | **Not applicable**<br>This is a residential/retail project, but project development would not preclude implementation of this strategy. |

As shown in Table 7, the project would increase GHG emissions by approximately 3,503 metric tons of $CO_2e$ per year. As discussed above and illustrated in Tables 8 and 9, the project would not conflict with the City's CAP, SCAG's RTP/SCS, or CAT report GHG reduction strategies; therefore, the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs and, per SCAQMD's recommended Tier 2 thresholds, impacts related to GHG emissions would be less than significant.

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