4.2 AIR QUALITY AND GREENHOUSE GAS EMISSIONS

This section describes and evaluates the potential air quality and greenhouse gas (GHG) impacts from the Project. The Project Site is located within the South Coast Air Basin (SCAB), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). In assessing air quality and GHG impacts, the following sources were considered: emissions from equipment that will be used during construction-related activities, operational-related emissions generated from electricity and water use, and emissions from motor vehicles generated by trips to and from the Project site. This section incorporates information from the air quality emissions calculations contained in **Appendix 4.2**.

ENVIRONMENTAL SETTING

Existing Conditions

Air Quality

Air pollutant emissions within the region are primarily generated by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point and area sources. Point sources occur at a specific location and are often identified by an exhaust vent or stack at a facility. Area sources are widely distributed and can include such sources as residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, parking lots, and some consumer products.

Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road sources. On-road sources may be legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, and self-propelled construction equipment.

Air pollutants can also be generated by the natural environment, such as when high winds suspend fine dust particles. The main source of pollutants near the Project area includes mobile emissions generated from on-road vehicles. Traffic-congested roadways and intersections have the potential to generate localized high levels of carbon monoxide (CO). Localized areas where ambient concentrations exceed State and/or federal standards are termed CO "hotspots."

The US Environmental Protection Agency (USEPA) is the federal agency responsible for setting the National Ambient Air Quality Standards (NAAQS). Air quality of a region is considered to be in attainment of the NAAQS if the measured ambient air pollutant levels are not exceeded more than once per year, except for ozone (O3), particulate matter (PM10), and fine particulate matter (PM2.5) and pollutant levels based on annual averages or arithmetic mean. The NAAQS for ozone, PM10, and PM2.5 are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The California

Air Resources Board (CARB) is the State agency responsible for setting the California Ambient Air Quality Standards (CAAQS). Air quality of a region is considered to be in attainment of the CAAQS if the measured ambient air pollutant levels for ozone, CO, nitrogen dioxide (NO2), sulfur dioxide (SO2), PM10, PM2.5, and lead are not exceeded, and all other standards are not equaled or exceeded at any time in any consecutive 3-year period.

A brief description of the criteria pollutants is provided.

- **Ozone (O3).** O3 is a gas that is formed when volatile organic compounds (VOCs) and oxides of nitrogen (NOx), both byproducts of internal combustion engine exhaust and other sources that undergo slow photochemical reactions in the presence of sunlight. O3 concentrations are generally highest during the summer months, when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.
- **Volatile organic compounds (VOCs).** VOCs are compounds composed primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Adverse effects on human health are not caused directly by VOCs, but rather by reactions of VOCs to form secondary air pollutants, including O3. VOCs are also referred to as reactive organic compounds (ROCs) or reactive organic gases (ROGs). VOCs themselves are not "criteria" pollutants; however, they contribute to the formation of O3.
- **Nitrogen dioxide (NO2).** NO2 is a reddish-brown, highly reactive gas that is formed in the ambient air through the oxidation of nitric oxide (NO). NO2 is also a byproduct of fuel combustion. The principle form of NO2 produced by combustion is NO, but NO reacts quickly to form NO2, creating the mixture of NO and NO2, referred to as oxides of nitrogen (NOx). NO2 acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NOx is only potentially irritating. NO2 absorbs blue light, the result of which is a reddish-brown cast to the atmosphere and reduced visibility.
- **Carbon monoxide (CO).** CO is a colorless, odorless gas produced by the incomplete combustion of fuels. CO concentrations tend to be the highest during the winter morning, with little to no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, and because motor vehicles operating at slow speeds are the primary source of CO in the basin, the highest ambient CO concentrations are generally found near congested transportation corridors and intersections.
- **Sulfur dioxide (SO2).** SO2 is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high–sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO2 oxidizes in the atmosphere, it forms sulfates (SO4).
- **Respirable particulate matter (PM10).** PM10 consists of extremely small, suspended particles or droplets 10 microns or smaller in diameter. Some sources of PM10, like pollen and windstorms, are naturally occurring. However, in populated areas, most PM10 is caused by road dust, diesel soot, combustion products, the abrasion of tires and brakes, and construction activities.

- **Fine particulate matter (PM2.5).** PM2.5 refers to particulate matter that is 2.5 micrometers or smaller in size. The sources of PM2.5 include fuel combustion from automobiles, power plants, wood burning, industrial processes, and diesel-powered vehicles such as buses and trucks. These fine particles are also formed in the atmosphere when gases such as SO2, NOx, and VOCs are transformed in the air by chemical reactions.
- **Lead (Pb).** Pb occurs in the atmosphere as particulate matter. The combustion of leaded gasoline is the primary source of airborne lead in the basin. The use of leaded gasoline is no longer permitted for on-road motor vehicles, so most such combustion emissions are associated with off-road vehicles, such as racecars, that use leaded gasoline. Other sources of Pb include the manufacturing and recycling of batteries, paint, ink, ceramics, ammunition, and secondary lead smelters.

For evaluation purposes, the SCAQMD has divided its territory into 36 source receptor areas (SRA) and placed operating monitoring stations in most of the SRAs. These SRAs are designated to provide a general representation of the local meteorological, terrain, and air quality conditions within the particular geographical area.

The City of Glendale, within Los Angeles County, California, is within the South Coast Air Basin (SCAB). The SCAB is a 6,600-square-mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The SCAB includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area in Riverside County.

The Project site is within SRA 7 and the SCAB. SCAQMD operates an air monitoring station in SRA 7 in the east San Fernando Valley. **Table 4.2-1, Air Quality Monitoring Summary,** summarizes published monitoring data from 2009 through 2011, the most recent 3-year period available. The data shows that, during the past few years, SRA 7 has exceeded the ozone, PM10, and PM2.5 standards.

The EPA and the CARB designate air basins where ambient air quality standards are exceeded as nonattainment areas. If standards are met, the area is designated as an attainment area. If there is inadequate or inconclusive data to make a definitive attainment designation, the area is considered unclassified. Federal nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards.

Table 4.2-1
Air Quality Monitoring Summary

Air Pollutant	Averaging Time (Units)	2011	2012	2013
Ozone (O3)	Max 1 hour (ppm)	0.120	0.117	0.110
	Days > CAAQS threshold (0.09 ppm)	8	8	4
	Max 8 hour (ppm)	0.084	0.089	0.083
	Days > CAAQS threshold (0.07 ppm)	10	17	17
	Days > NAAQS threshold (0.075 ppm)	6	8	6
Carbon monoxide (CO)	Max 8 hour (ppm)	2.37	2.35	-
	Days > CAAQS threshold (9.0 ppm)	0	0	0
	Days > NAAQS threshold (9.0 ppm)	0	0	0
Nitrogen dioxide (NO2)	Mean (ppm)	0.027	-	-
	Max 1 hour (ppm)	0.067	0.079	0.072
	Days > CAAQS threshold (0.18 ppm)	0	0	0
Sulfur dioxide (SO2)	Max 24 hour (ppm)	0.002	0.002	0.002
	Days > CAAQS threshold (0.04 ppm)	0	0	0
	Days > NAAQS threshold (0.14 ppm)	0	0	0
Suspended particulate matter (PM10)	Mean ($\mu g/m^3$)	25.0	26.4	25.8
	24 hour ($\mu g/m^3$)	60	54	51
	Days > CAAQS threshold (50 $\mu g/m^3$)	2	1	1
	Days > NAAQS threshold (150 $\mu g/m^3$)	0	0	0
Fine particulate matter (PM2.5)	Mean ($\mu g/m^3$)	13.2	12.2	12.2
	24 hour ($\mu g/m^3$)	47.8	54.2	45.1
	Days > NAAQS threshold (35 $\mu g/m^3$)	5	2	4

Source: California Air Resources Board, "Historical Data by Year"(2011-2013), http://www.arb.ca.gov/adam/.
Note: > = exceed; CAAQS = California Ambient Air Quality Standard; max = maximum; mean = annual arithmetic mean; $\mu g/m^3$ = micrograms per cubic meter; ND = no data ; NAAQS = National Ambient Air Quality Standard; ppm = parts per million.

The current attainment designations for the SCAB are shown in **Table 4.2-2, South Coast Air Basin Attainment Status**. The SCAB is currently designated as being in nonattainment for the federal ozone, lead, and PM2.5; and as unclassified/attainment for the federal carbon monoxide and nitrogen dioxide. The SCAB is currently designated as being in nonattainment for the State ozone, PM10, and PM2.5 standards. Areas where air pollution levels persistently exceed the state or national ambient air quality standards may be designated "nonattainment."

Table 4.2-2
South Coast Air Basin Attainment Status

Pollutant	State Status	National Status
Ozone (O3)	Nonattainment	Nonattainment
Carbon monoxide (CO)	Attainment	Unclassified/Attainment
Nitrogen dioxide (NO2)	Attainment	Unclassified/Attainment
Sulfur dioxide (SO2)	Attainment	Attainment
Lead (Pb)	Attainment	Nonattainment
Suspended particulate matter (PM10)	Nonattainment	Attainment
Fine particulate matter (PM2.5)	Nonattainment	Nonattainment

Sources: CARB, "Area Designations Maps/State and National," http://www.arb.ca.gov/desig/adm/adm.htm
EPA, The Green Book Nonattainment Areas for Criteria Pollutants, http://www.epa.gov/air/oaqps/greenbk/index.html

Individuals who are sensitive to air pollution include children, the elderly, and persons with preexisting respiratory or cardiovascular illness. For purposes of CEQA, the SCAQMD considers a sensitive receptor to be a location—such as a residence, hospital, or convalescent facility—where a sensitive individual could remain for 24 hours. Commercial and industrial facilities are not included in the definition because employees do not typically remain on site for 24 hours. However, when assessing the impact of pollutants with 1-hour or 8-hour standards (such as NO2 and CO), commercial and/or industrial facilities would be considered sensitive receptors for those purposes.

Land uses surrounding the Project site include six existing single family residences and a two-story apartment building to the north, a commercial retail center to the east, a restaurant and church to the south, and a retirement home to the west.

Greenhouse Gases

Climate change is a change in the average weather of the Earth that may be measured by changes in wind patterns, storms, precipitation, and temperature. These changes are assessed using historical records of temperature changes that have occurred in the past, such as during previous ice ages. Many of the concerns regarding climate change use this data to extrapolate a level of statistical significance, specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change (IPCC) considered six alternative future GHG scenarios that would stabilize global temperatures and climate change impacts. Without additional mitigation IPCC predicted that global mean temperature would increase in 2100 for the six scenarios from 2.5 degrees Celsius (°C) to 7.8°C. Global average temperatures and sea levels are expected to rise under all scenarios.[1]

In California, climate change may result in consequences such as the following:

- A reduction in the quality and supply of water to the State from the Sierra snowpack
- An increased risk of large wildfires
- Reductions in the quality and quantity of certain agricultural products
- Exacerbation of air quality problems
- A rise in sea levels resulting in the displacement of coastal businesses and residences
- Damage to marine ecosystems and the natural environment
- An increase in infections, disease, asthma, and other health-related problems
- A decrease in the health and productivity of California's forests

Gases that trap heat in the atmosphere are called GHGs because the effect is analogous to the way a greenhouse retains heat. Common GHGs include water vapor, carbon dioxide (CO2), methane (CH4), Nitrogen oxides (NOx), chlorofluorocarbons, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), O3, and aerosols. Without the natural greenhouse effect, the average temperature at Earth's surface would be below the freezing point of water.[2] However, it is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

The global warming potential (GWP) is the potential of a gas or aerosol to trap heat in the atmosphere. The GWP compares the amount of heat trapped by a certain mass of the gas in question to the amount of heat trapped by a similar mass of CO2. A GWP is calculated over a specific time interval, commonly 20, 100, or 500 years. GWP is expressed as a factor of CO2 (whose GWP is standardized to 1). For example, the 100-year GWP of methane is 21, which means that if the same mass of methane and CO2 were introduced into the atmosphere, that methane will trap 21 times more heat than the CO2 over the

1 IPCC, Summary for Policymakers, Climate Change 2014: The Mitigation of Climate Change, Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (Edenhofer, O., R. Pichs-Madruga, Y Sokona, et. al. [eds.]). (Cambridge University Press: Cambridge, United Kingdom, 2014).

2 California Environmental Protection Agency, Climate Action Team, Climate Action Team Report to Governor Schwarzenegger and the California Legislature (March 2006), www.climatechange.ca.gov/climate_action_team /reports/index.html.

next 100 years.[3] The GHGs of most concern are identified in **Table 4.2-3, Greenhouse Gases**. Of these two primary sources of GHG—CO2 and methane—CO2 would be generated by sources associated with the Project, while methane would not be generated in any substantial amount.

Table 4.2-3
Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Carbon dioxide (CO2)	Carbon dioxide is an odorless, colorless, natural GHG; GWP = 1.	Carbon dioxide is emitted from natural and anthropogenic sources. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungi; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood. The concentration in 2005 was 379 ppm, which is an increase of about 1.4 ppm per year since 1960.
Methane (CH4)	Methane is a flammable gas and is the main component of natural gas; GWP = 21.	A natural source of methane is from the anaerobic decay of organic matter. Methane is extracted from geological deposits (natural gas fields). Other sources are from landfills, fermentation of manure, and cattle.
Nitrous oxide (N2O)	Nitrous oxide is also known as laughing gas and is a colorless GHG; GWP = 310.	Microbial processes in soil and water, fuel combustion, and industrial processes.

Source: IPCC, Summary for Policymakers, Climate Change 2014: The Mitigation of Climate Change, Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (Edenhofer, O., R. Pichs-Madruga, Y Sokona, et. al. [eds.]). (Cambridge University Press: Cambridge, United Kingdom, 2014).
Notes: GWP = global warming potential; ppm = parts per million; (measure of concentration in the atmosphere).

Individual GHG compounds have varying GWP and atmospheric lifetimes. The calculation of the CO2 equivalent is a consistent methodology for comparing GHG emissions, since it normalizes various GHG emissions to a consistent metric. Methane's warming potential of 21 indicates that methane has a 21 times greater warming affect than CO2 on a molecule per molecule basis. A CO2 equivalent is the mass emissions of an individual GHG multiplied by its GWP.

Emissions Inventory and Trends

California is the second largest contributor of GHGs in the United States and the 16th largest in the world.[4] In 2012, California produced 458.68 million metric tons of CO2 equivalents (MMTCO2E),[5]

3 USEPA, "Overview of Greenhouse Gases: Methane Emissions," (July 2014). http://epa.gov/climatechange/ghgemissions/gases/ch4.html#Trends.

including imported electricity and excluding combustion of international fuels and carbon sinks or storage. The major source of GHGs in California is transportation, contributing to 37 percent of the State's total GHG emissions.[6] Electricity generation (both in and out of state) is the second largest source, contributing to 21 percent of the State's GHG emissions.[7] The statewide inventory of GHGs by sector is shown in **Table 4.2-4, California GHG Inventory 2004-2012**.

Table 4.2-4
California GHG Inventory 2004–2012

Main Sector	Emissions MMTCO2e								
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Transportation[1]	186.88	189.08	189.18	189.27	178.02	171.47	170.46	168.13	167.38
Electric Power	115.20	107.86	104.54	113.94	120.15	101.32	90.30	88.04	95.09
Commercial/ Residential	42.90	41.24	41.89	42.11	42.44	42.65	43.82	44.32	42.28
Industrial[2]	94.48	92.29	90.28	87.10	87.54	84.95	88.51	88.34	89.16
Recycling and Waste	7.57	7.75	7.80	7.93	8.09	8.23	8.34	8.42	8.49
High GWP[3,4]	9.56	10.36	11.08	11.78	12.87	13.99	15.89	17.35	18.41
Agriculture	36.26	36.54	37.75	37.03	37.99	35.84	35.73	36.34	37.86
Total Emissions	**492.86**	**485.13**	**482.52**	**489.16**	**487.10**	**458.44**	**453.06**	**450.94**	**458.68**

Source: CARB (2014).
1 Includes equipment used in construction, mining, oil drilling, industrial and airport ground operations
2 Reflects emissions from combustion of natural gas, diesel, and lease fuel plus fugitive emissions
3 These categories are listed in the Industrial sector of ARB's GHG Emission Inventory sectors
4 This category is listed in the Electric Power sector of ARB's GHG Emission Inventory sectors

Regulatory Setting

Air quality within the basin is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policymaking, education, and a variety of programs. The agencies primarily responsible for improving the air quality within the basin are discussed in the following paragraphs along with their individual responsibilities.

4 US Environmental Protection Agency, "Inventory of US Greenhouse Gas Emissions and Sinks: 1990 to 2012", EPA-430-R-14-003. (April 2014).
5 CARB, California Greenhouse Gas Inventory for 2000-2012 by Category as Defined in the 2008 Scoping Plan, http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-12_2014-03-24.pdf (March 24, 2014).
6 CARB (2014).
7 CARB (2014).

Air Quality

Federal

At the federal level, the EPA is responsible for the implementation of portions of the Clean Air Act (CAA) dealing with certain mobile sources of air emissions and other requirements. Charged with handling global, international, national, and interstate air pollution issues and policies, the EPA sets national vehicle and stationary source emission standards, oversees the approval of all State Implementation Plans,[8] provides research and guidance for air pollution programs, and sets NAAQS. The NAAQS for six common air pollutants (O3, PM10 and PM2.5, NO2, CO, Pb, and SO2) shown in **Table 4.2-5, Criteria Air Pollutants**, were identified from provisions of the Clean Air Act of 1970.

The NAAQS were set to protect public health, including that of sensitive individuals. For this reason, the standards continue to change as more medical research is available regarding the health effects of the criteria pollutants. The primary NAAQS define the air quality considered necessary, with an adequate margin of safety, to protect the public health.[9] Other portions of the CAA, such as the portions dealing with stationary source requirements, are implemented by state and local agencies.

8 A State Implementation Plan is a document prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain NAAQS.

9 EPA, "A Comprehensive Analysis of Biodiesel Impacts on Exhaust Emissions, EPA420-P-02-001" (October 2002). EPA, "Ground-Level Ozone," http://www.epa.gov/air/ozonepollution/faq.html#health. (November 1, 2012). EPA, "Particulate Matter: Health," http://www.epa.gov/pm/health.html. (May 6, 2014). EPA, "Health and Environmental Impacts of CO," http://www.epa.gov/airquality/carbonmonoxide/. (December 10, 2012). EPA, "Fact Sheet, Proposed Revisions to the National Ambient Air Quality Standards for Oxides of Nitrogen and Sulfur," http://www.epa.gov/oar/nitrogenoxides/pdfs/20120320factsheet.pdf. (March 20, 2012).

Table 4.2-5
Criteria Air Pollutants

Air Pollutant	Averaging Time	CA Standard	National Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Ozone (O3)	1 hour 8 hour	0.09 ppm 0.070 ppm	— 0.075 ppm	(a) Decrease of pulmonary function and localized lung edema in humans and animals; (b) risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) increased mortality risk; (d) risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) vegetation damage; and (f) property damage.	O3 is a photochemical pollutant as it is not emitted directly into the atmosphere, but is formed by a complex series of chemical reactions between VOC, NOx, and sunlight. O3 is a regional pollutant that is generated over a large area and is transported and spread by the wind.	O3 is a secondary pollutant; thus, it is not emitted directly into the lower level of the atmosphere. The primary sources of ozone precursors (VOC and NOx) are mobile sources (on-road and off-road vehicle exhaust).
Carbon monoxide (CO)	1 hour 8 hour	20 ppm 9.0 ppm	35 ppm 9 ppm	(a) Aggravation of angina pectoris (chest pain) and other aspects of coronary heart disease; (b) decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) impairment of central nervous system functions; and (d) possible increased risk to fetuses.	CO is a colorless, odorless, toxic gas. CO is somewhat soluble in water; therefore, rainfall and fog can suppress CO conditions. CO enters the body through the lungs, dissolves in the blood, replaces oxygen as an attachment to hemoglobin, and reduces available oxygen in the blood.	CO is produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, biomass). Sources include motor vehicle exhaust, industrial processes (metals processing and chemical manufacturing), residential wood burning, and natural sources.

Air Pollutant	Averaging Time	CA Standard	National Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Nitrogen dioxide (NO_2)[b]	1 hour Annual	0.18 ppm 0.030 ppm	0.100 ppm 0.053 ppm	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) risk to public health implied by pulmonary and extrapulmonary biochemical and cellular changes and pulmonary structural changes; and (c) contribution to atmospheric discoloration.	During combustion of fossil fuels, oxygen reacts with nitrogen to produce NOx (NO, NO2, NO3, N2O, N2O3, N2O4, and N2O5). NOx is a precursor to O3, PM10, and PM2.5 formation. NOx can react with compounds to form nitric acid and related particles.	NOx is produced in motor vehicle internal combustion engines and fossil fuel–fired electric utility and industrial boilers. NO2 concentrations near major roads can be 30 to 100 percent higher than those at monitoring stations.
Sulfur dioxide (SO2)	1 hour 3 hour 24 hour Annual	0.25 ppm — 0.04 ppm —	— 0.5 ppm 0.14 ppm 0.030 ppm	Bronchoconstriction accompanied by symptoms that may include wheezing, shortness of breath, and chest tightness during exercise or physical activity in persons with asthma. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO2 levels. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.	SO2 is a colorless, pungent gas. At levels greater than 0.5 ppm, the gas has a strong odor, similar to rotten eggs. Sulfur oxides (SOx) include SO2 and sulfur trioxide. Sulfuric acid is formed from SO2, which can lead to acid deposition and can harm natural resources and materials. Although SO2 concentrations have been reduced to levels well below State and national standards, further reductions are desirable because SO2 is a precursor to sulfate and PM10.	Human-caused sources include fossil fuel combustion, mineral ore processing, and chemical manufacturing. Volcanic emissions are a natural source of SO2. The gas can also be produced in the air by dimethylsulfide and hydrogen sulfide. SO2 is removed from the air by dissolution in water, chemical reactions, and transfer to soils and ice caps. The SO2 levels in the State are well below the maximum standards.
Particulate matter (PM10)	24 hour Mean	50 $\mu g/m^3$ 20 $\mu g/m^3$	150 $\mu g/m^3$ —	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b)	Suspended particulate matter is a mixture of small particles that consist of dry solid	Stationary sources include fuel combustion for electrical utilities, residential space

Air Pollutant	Averaging Time	CA Standard	National Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Particulate matter (PM2.5)	24 hour	—	35 µg/m^3	declines in pulmonary function growth in children; and (c) increased risk of premature death from heart or lung diseases in the elderly. Daily fluctuations in PM2.5 levels have been related to hospital admissions for acute respiratory conditions, school absences, and increased medication use in children and adults with asthma.	fragments, droplets of water, or solid cores with liquid coatings. The particles vary in shape, size, and composition. PM10 refers to particulate matter that is 10 microns or less in diameter, (1 micron is 1-millionth of a meter). PM2.5 refers to particulate matter that is 2.5 microns or less in diameter.	heating, and industrial processes; construction and demolition; metals, minerals, and petrochemicals; wood products processing; mills and elevators used in agriculture; erosion from tilled lands; waste disposal; and recycling. Mobile or transportation-related sources are from vehicle exhaust and road dust.
	Annual	12 µg/m^3	15.0 µg/m^3			
Sulfates	24 hour	25 µg/m^3	—	(a) Decrease in ventilatory function; (b) aggravation of asthmatic symptoms; (c) aggravation of cardiopulmonary disease; (d) vegetation damage; (e) degradation of visibility; and (f) property damage.	The sulfate ion is a polyatomic anion with the empirical formula SO42−. Sulfates occur in combination with metal and/or hydrogen ions. Many sulfates are soluble in water.	Sulfates are particulates formed through the photochemical oxidation of SO2. In California, the main source of sulfur compounds is the combustion of gasoline and diesel fuel.
Lead (Pb)[c]	30 day	1.5 µg/m^3	—	Pb accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. It can cause impairment of blood formation and nerve conduction. The more serious effects of lead poisoning include behavior disorders, mental retardation, neurological impairment, learning deficiencies, and low IQs. Pb may also contribute to high blood pressure	Pb is a solid heavy metal that can exist in air pollution as an aerosol particle component. An aerosol is a collection of solid, liquid, or mixed-phase particles suspended in the air. Pb was first regulated as an air pollutant in 1976. Leaded gasoline was first marketed in 1923 and was used in motor vehicles until around 1970. Pb concentrations have not exceeded State or national air	Pb-ore crushing, Pb-ore smelting, and battery manufacturing are currently the largest sources of Pb in the atmosphere in the United States. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and crustal physical weathering. Pb can be removed from the atmosphere through deposition to soils, ice caps,
	Quarter	—	1.5 µg/m^3			
	Rolling 3-month average	—	0.15 µg/m^3			

Air Pollutant	Averaging Time	CA Standard	National Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
				and heart disease.	quality standards at any monitoring station since 1982.	oceans, and inhalation.
Vinyl chloride[c]	24 hour	0.01 ppm	—	Short-term exposure to high levels of vinyl chloride in the air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers.	Vinyl chloride, or chloroethene, is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. In 1990, the CARB identified vinyl chloride as a toxic air contaminant and estimated a cancer unit risk factor.	Most vinyl chloride is used to make polyvinyl chloride plastic and vinyl products, including pipes, wire and cable coatings, and packaging materials. It can be formed when plastics containing these substances are left to decompose in solid waste landfills. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites.
Hydrogen sulfide (H2S)	1 hour	0.03 ppm	—	High levels of H2S can cause immediate respiratory arrest. It can irritate the eyes and respiratory tract and cause headaches, nausea, vomiting, and coughs. Long exposure can cause pulmonary edema.	H2S is a flammable, colorless, poisonous gas that smells like rotten eggs.	Manure, storage tanks, ponds, anaerobic lagoons, and land application sites are the primary sources of H2S. Anthropogenic sources include the combustion of sulfur containing fuels (oil and coal).
Volatile organic compounds (VOC)	--	There are no State or national ambient air quality standards for VOCs because they are not classified as criteria pollutants.		Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations because of interference with oxygen uptake. In general, concentrations of VOCs are suspected to cause eye, nose, and throat irritation;	ROGs, or VOCs, are defined as any compound of carbon—excluding CO, CO2, carbonic acid, metallic carbides or carbonates, and ammonium carbonate—that participates in atmospheric photochemical reactions. Although there are slight differences in the	Indoor sources of VOCs include paints, solvents, aerosol sprays, cleansers, tobacco smoke, etc. Outdoor sources of VOCs are from combustion and fuel evaporation. A reduction in VOC emissions reduces certain chemical reactions

Air Pollutant	Averaging Time	CA Standard	National Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
				headaches; loss of coordination; nausea; and damage to the liver, the kidneys, and the central nervous system. Many VOCs have been classified as toxic air contaminants.	definition of ROGs and VOCs, the two terms are often used interchangeably.	that contribute to the formulation of ozone. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM10 and lower visibility.

Sources: Effects: South Coast Air Quality Management District, "Final 2012 Air Quality Management Plan," http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan (2013). California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, "Health Effects of Diesel Exhaust," http://oehha.ca.gov/public_info/facts/dieselfacts.html (2002). California Air Resources Board, "Vinyl Chloride," www.arb.ca.gov/research/aaqs/caaqs/vc/vc.htm (2009). EPA, Technology Transfer Network, "Health Effects Notebook for Hazardous Air Pollutants," Air Toxics website, http://www.epa.gov/ttnatw01/hlthef/hapindex.html (October 18, 2013). US EPA, Technology Transfer Network, "Benzene," Air Toxics website, www.epa.gov/ttn/atw/hlthef/benzene.html (October 18, 2013).
Standards: CARB, "California Greenhouse Gas Inventory for 2000-2012 by Category as Defined in the Scoping Plan," http://www.arb.ca.gov/cc/inventory/inventory.htm (2014).
Properties and sources: EPA, Office of Air and Radiation,"Nitrogen Oxides: Health," http://www.epa.gov/oagps001/nitrogenoxides/health.html (February 2013). EPA, "Ground-Level Ozone," http://www.epa.gov/airquality/ozonepollution/faq.html#health (November 2102). EPA," A Comprehensive Analysis of Biodiesel Impacts on Exhaust Emissions, EPA420-P-02-001," (October 2002); EPA, "Particulate Matter: Health," http://www.epa.gov/airquality/particlepollution/health.html (May 2014). EPA," Carbon Monoxide: Health," http://www.epa.gov/airquality/carbonmonoxide/health.html. (December 2012); EPA, "Fact Sheet, Proposed Revisions to the National Ambient Air Quality Standards for Oxides of Nitrogen and Sulfur," http://www.epa.gov/oar/nitrogenoxides/pdfs/20120320factsheet.pdf. (March 20, 2012).
Notes: ppm = parts per million (concentration); µg/m^3 = micrograms per cubic meter; annual = annual arithmetic mean; 30-day = 30-day average; quarter = calendar quarter.

[a] *National standard refers to the primary national ambient air quality standard, or the levels of air quality necessary, with an adequate margin of safety to protect the public health. All standards listed are primary standards except for 3 hour SO2, which is a secondary standard. A secondary standard is the level of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.*

[b] *EPA established a new 1-hour NO2 standard of 100 ppb or 188 µg/m^3, which became effective April 12, 2010. In addition to establishing an averaging time and level, the EPA also is setting a new "form" for the standard. The form is the air quality statistic used to determine if an area meets the standard. The form for the 1-hour NO2 standard is the 3-year average of the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations. This suite of standards will protect public health by limiting exposures to short-term peak concentrations of NO2,which primarily occur near major roads, and by limiting community-wide NO2 concentrations to levels below those that have been linked to respiratory-related emergency department visits and hospital admissions in the United States.*

[c] *The CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.*

The 1990 amendments to the CAA identify specific emission reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and the incorporation of additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA that are most applicable to the Project include Title I, Nonattainment Provisions, and Title II, Mobile Source Provisions.

The NAAQS were also amended in July 1997 to include an 8-hour standard for O3 and to adopt a NAAQS for PM2.5. The NAAQS were amended in September 2006 to include an established methodology for calculating PM2.5, as well as revoking the annual PM10 threshold. The CAA includes the following deadlines for meeting the NAAQS within the South Coast Air Basin: (1) PM2.5 by the year 2014 and (2) 8-hour O3 by the year 2023. Although the deadline for federal 1-hour O3 standard has passed, the South Coast Air Basin has yet to attain those standards, but is continuing to implement the 2012 Air Quality Management Plan (AQMP) to attain these standards as soon as possible.

State

The California CAA, signed into law in 1988, requires all areas of the State to achieve and maintain the CAAQS by the earliest practicable date. The CARB, a part of the California EPA, is responsible for the coordination and administration of both state and federal air pollution control programs within California. In this capacity, the CARB conducts research, sets State ambient air quality standards, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. The CARB establishes emissions standards for motor vehicles sold in California, consumer products, and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. **Table 4.2-5** includes the CAAQS currently in effect for each of the criteria pollutants as well as other pollutants recognized by the State. As shown in **Table 4.2-5**, the CAAQS include more stringent standards than the NAAQS.

Local

The SCAQMD shares responsibility with CARB for ensuring that all State and federal ambient air quality standards are achieved and maintained over an area of approximately 10,743 square miles. This area includes all of Orange County and Los Angeles County except for the Antelope Valley, the non-desert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County.

The Project lies within the jurisdiction of the SCAQMD, and compliance with SCAQMD rules and guidelines is required. SCAQMD is responsible for controlling emissions primarily from stationary sources. SCAQMD maintains air quality monitoring stations throughout the South Coast Air Basin.

SCAQMD, in coordination with the Southern California Association of Governments (SCAG), is also responsible for developing, updating, and implementing the AQMP for the SCAB. An AQMP is a plan prepared and implemented by an air pollution district for a county or region designated as "nonattainment" of the national and/or California ambient air quality standards. The term "nonattainment area" is used to refer to an air basin in which one or more ambient air quality standards are exceeded.

The SCAQMD approved the 2012 AQMP on December 7, 2012. The 2012 AQMP incorporates the latest scientific and technological information and planning assumptions, including the 2012 Regional Transportation Plan/Sustainable Communities Strategy and updated emission inventory methodologies for various source categories. The 2012 AQMP outlines a comprehensive control strategy that meets the requirement for expeditious progress toward attainment with the 24-hour PM2.5 federal ambient air quality standard with all feasible control measures and demonstrates attainment of the standard by 2014. The 2012 AQMP is also an update to the 8-hour O3 control plan with new emission reduction commitments from a set of new control measures, which implement the 2007 AQMP's Section 182 (e)(5) commitments. The goal of the Final 2012 AQMP is to lead the SCAB into compliance with the national 8-hour O3 and PM2.5 standards.[10]

The SCAQMD is responsible for limiting the amount of emissions that can be generated throughout the basin by various stationary, area, and mobile sources. Specific rules and regulations have been adopted by the SCAQMD Governing Board, which limit the emissions that can be generated by various uses/activities and that identify specific pollution reduction measures, which must be implemented in association with various uses and activities. These rules not only regulate the emissions of the federal and state criteria pollutants, but also toxic air contaminants (TACs) and acutely hazardous materials. The rules are also subject to ongoing refinement by SCAQMD.

Among the SCAQMD rules applicable to the Project are Rule 403 (Fugitive Dust), Rule 1113 (Architectural Coatings), and Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities). Rule 403 requires the use of stringent best available control measures to minimize PM10 emissions during grading and construction activities. Rule 1113 requires reductions in the VOC content of coatings, with a substantial reduction in the VOC content limit for flat coatings. Compliance with SCAQMD Rule 1403 requires that the owner or operator of any demolition or renovation activity to have an asbestos survey performed prior to demolition and to provide notification to the SCAQMD prior to commencing

10 South Coast Air Quality Management District, "Final 2012 Air Quality Management Plan," http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan (2013).

demolition activities. Additional details regarding these rules and other potentially applicable rules are presented in the following.

Rule 403 (Fugitive Dust). This rule requires fugitive dust sources to implement Best Available Control Measures for all sources, and all forms of visible particulate matter are prohibited from crossing any property line. This may include application of water or chemical stabilizers to disturbed soils, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 miles per hour (mph), sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph, and establishing a permanent ground cover on finished sites. SCAQMD Rule 403 is intended to reduce PM10 emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust (see also Rule 1186).

Rule 1113 (Architectural Coatings). This rule requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories.

Rule 1121 (Control of Nitrogen Oxides from Residential Type, Natural Gas–Fired Water Heaters). This rule prescribes NO_X emission limits for natural gas-fired water heaters with heat input rates less than 75,000 British thermal unit (Btu) per hour. It applies to manufacturers, distributors, retailers, and installers of natural gas–fired water heaters. In lieu of meeting these NO_X limits, this rule allows emission mitigation fees to be collected from water heater manufacturers to fund stationary and mobile source emission reduction projects targeted at offsetting NO_X emissions from water heaters that do not meet Rule 1121 emission standards.

Rule 1146.2 (Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters). This rule requires manufacturers, distributors, retailers, refurbishers, installers, and operators of new and existing units to reduce NO_X emissions from natural gas–fired water heaters, boilers, and process heaters as defined in this rule.

Rule 1186 (PM10 Emissions from Paved and Unpaved Roads, and Livestock Operations). This rule applies to owners and operators of paved and unpaved roads and livestock operations. The rule is intended to reduce PM10 emissions by requiring the cleanup of material deposited onto paved roads, use of certified street sweeping equipment, and treatment of high-use unpaved roads (see also Rule 403).

Stationary emissions sources subject to these rules are regulated through SCAQMD's permitting process. Through this permitting process, SCAQMD also monitors the amount of stationary emissions being

generated and uses this information in developing AQMPs. The Project would be subject to SCAQMD rules and regulations to reduce specific emissions and to mitigate potential air quality impacts.

Greenhouse Gases

Federal

On April 17, 2009, the EPA released a proposed finding that determined climate change poses a risk to public health. The EPA held a 60-day public comment period, which ended June 23, 2009, and which received over 380,000 public comments. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- Endangerment finding: The Administrator found that the current and projected concentrations of the six key well-mixed GHGs—CO2, CH4, N2O, HFCs, PFCs, and sulfur hexafluoride (SF6)—in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or contribute finding: The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.

These findings do not by themselves impose any requirements on industry or other entities. However, this action is a prerequisite to finalizing the proposed EPA GHG standards for light-duty vehicles. These standards were jointly proposed by the EPA and the Department of Transportation's National Highway Safety Administration (NHTSA) on September 15, 2009. The two findings were published in the Federal Register Docket ID No. EPA-HQ-OAR-2009-0171. The final rule was effective January 14, 2010.

The EPA has issued the Final Mandatory Reporting of Greenhouse Gases Rule that requires reporting of GHG emissions from large sources and suppliers in the United States. Under the rule (effective December 29, 2009), suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the EPA. The gases covered by the proposed rule are CO2, CH4, N2O, HFC, PFC, SF6, and other fluorinated gases, including nitrogen trifluoride (NF_3) and hydrofluorinated ethers (HFE).

On September 15, 2009, the EPA and the NHTSA proposed a new national program to reduce GHG emissions and to improve fuel economy for all new cars and trucks sold in the United States. The EPA proposed the first-ever national GHG emissions standards under the CAA, and the NHTSA proposed Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act. This proposed national program would allow automobile manufacturers to build a single light-duty national fleet that satisfies all requirements under both federal programs and the standards of California and other states.

State

Significant legislative and regulatory activities that affect climate change and GHG emissions in California that relate to the Project are discussed in the following.

AB 1493. California Assembly Bill 1493 (Pavley), enacted on July 22, 2002, required the CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks. Regulations adopted by the CARB apply to 2009 and later model year vehicles. The CARB estimates that the regulation would reduce climate change emissions from the light-duty passenger vehicle fleet by an estimated 18 percent in 2020 and by 27 percent in 2030.[11] On June 30, 2009, the US EPA granted a waiver of CAA preemption to California for the State's GHG emission standards for motor vehicles beginning with the 2009 model year. The waiver was published in the Federal Register on July 8, 2009.

Executive Order S-3-05. Former California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05,[12] the following reduction targets for GHG emissions:

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

The 2050 reduction goal represents what scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be an aggressive, but achievable, midterm target. To meet these targets, the governor directed the secretary of the California EPA to lead a Climate Action Team made up of representatives from the Business, Transportation, and Housing Agency; the Department of Food and Agriculture; the Resources Agency; the CARB; the Energy Commission; and the Public Utilities Commission. The Climate Action Team's Report to the governor in 2006 contains recommendations and strategies to help ensure that the targets in Executive Order S-3-05 are met.[13]

Executive Order S-01-07. The former governor signed Executive Order S-01-07 on January 18, 2007. The order mandated that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. It also established a Low Carbon Fuel Standard for transportation fuels for California.

11 CARB, "Fact Sheet, Climate Change Emission Control Regulations" (December 10, 2004).
12 State of California, Executive Order S-3-05, http://www.dot.ca.gov/hq/energy/ExecOrderS-3-05.htm (June 1, 2005).
13 State of California, EPA, Climate Action Team, "Climate Action Team Report to Governor Schwarzenegger and the California Legislature," www.climatechange.ca.gov/climate_action_team /reports/index.html (March 2006).

SB 1368. In 2006, the State Legislature adopted Senate Bill 1368, which was subsequently signed into law by the governor. SB 1368 directs the California Public Utilities Commission to adopt a performance standard for GHG emissions for the future power purchases of California utilities. In an effort to limit carbon emissions associated with electrical energy consumed in California, this bill prohibits purchase arrangements for energy for periods of longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. A coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants. Accordingly, the new law will effectively prevent California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the State. Thus, SB 1368 will lead to lower GHG emissions associated with California's energy demand, by effectively prohibiting California utilities from purchasing power from out-of-state producers that cannot satisfy the required performance standard for GHG emissions.

SB 97. SB 97 was passed in August 2007, and added Section 21083.05 to the Public Resources Code. It states:

> *(a) On or before July 1, 2009, the Office of Planning and Research (OPR) shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the OPR pursuant to subdivision (a).*

CEQA Amendments. As required by SB 97, the Governor's Office of Planning and Research prepared and transmitted recommended Amendments to the State *CEQA Guidelines* for GHG emissions to the California Natural Resources Agency on April 13, 2009. The Office of Administrative Law reviewed the Adopted Amendments and the Natural Resources Agency's rulemaking file. The Adopted Amendments were filed with the Secretary of State, and became effective March 18, 2010.

The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing State *CEQA Guidelines* to reference climate change.

A new section, State *CEQA Guidelines* Section 15064.4, was added to assist agencies in determining the significance of GHG emissions. The new section allows agencies the discretion to determine whether a quantitative or qualitative analysis is best for a particular project. This section does not provide guidance to public agencies on how to determine whether the project's estimated GHG emissions are significant or cumulatively considerable.

Also amended were State *CEQA Guidelines* Sections 15126.4 and 15130, which address mitigation measures and cumulative impacts, respectively. GHG mitigation measures are referenced in general terms, but no specific measures are identified or required. The revision to the cumulative impact guideline directs public agencies to analyze GHG emissions in an environmental impact report (EIR) when the incremental contribution of emissions from a project being reviewed may be cumulatively considerable. However, the determination of when emissions are cumulatively considerable is left to the discretion of the public agency reviewing a proposed project.

The Amendments also added Section 15183.5, which permits programmatic GHG analyses and allows for project-specific analyses to tier off this program-level analysis, and the preparation of GHG reduction plans for a city or county. Compliance with a GHG reduction plan can then be used to support a determination that an individual project's contribution to GHG impacts is not cumulatively considerable.

In addition, the Amendments revised Appendix F of the State *CEQA Guidelines*, which focuses on Energy Conservation, and Appendix G, which includes the sample Environmental Checklist Form.

AB 32. In 2006, the California State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHG emissions in California. GHGs, as defined under AB 32, include CO2, CH4, NO2, HFCs, PFCs, and SF6. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. CARB is the state agency charged with monitoring and regulating sources of emissions of GHGs that cause global warming in order to reduce emissions of GHGs.

The CARB Governing Board approved the 1990 GHG emissions level of 427 MMTCO2E on December 6, 2007. Therefore, in 2020, emissions in California are required to be at or below 427 MMTCO2E.

Under the current "business-as-usual" scenario, statewide emissions are increasing at a rate of approximately 1 percent per year.

- 1990: 427 MMTCO2E
- 2004: 480 MMTCO2E
- 2008: 495 MMTCO2E
- 2020: 596 MMTCO2E

Under AB 32, the CARB published its Final Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California.[14] The CARB has 44 early action measures that apply to the

14 CARB, "Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration," www.arb.ca.gov/cc/ejac/ghg_eamcommitteelist.pdf (October 2007).

transportation, commercial, forestry, agriculture, cement, oil and gas, fire suppression, fuels, education, energy efficiency, electricity, and waste sectors. Of those early action measures, nine are considered discrete early action measures,[15] as they were adopted by CARB and enforceable by January 1, 2010. The CARB estimates that the 44 early action measures will result in reductions of at least 42 MMTCO2E by 2020, representing approximately 25 percent of the projected reduction needed to reach the 2020 target.

CEQA is only mentioned once in the Early Action Measures report. The California Air Pollution Control Officer's Association suggested that CARB work with local air districts on approaches to review GHG impacts under the CEQA process, including significance thresholds for GHGs for projects and to develop a process for capturing reductions that result from CEQA mitigations. CARB's response to this recommendation in the report is as follows:

> *[T]he Governor's Office of Planning and Research is charged with providing statewide guidance on CEQA implementation. With respect to quantifying any reductions that result from project-level mitigation of GHG emissions, we would like to see air districts take a lead role in tracking such reductions in their regions.*[16]

The CARB approved the Climate Change Scoping Plan (2008 Scoping Plan) in December 2008. The 2008 Scoping Plan:

> *[P]roposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health.*[17]

As noted in the approved 2008 Scoping Plan, the projected total business-as-usual emissions for year 2020 (estimated as 596 MMTCO2E) must be reduced by approximately 28 percent to achieve the CARB's approved 2020 emission target of 427 MMTCO2E. CARB updated the 2008 Scoping Plan in May 2014 (Updated 2014 Scoping Plan).[18] The Updated 2014 Scoping Plan adjusted the 1990 GHG emissions level to 431 MMTCO2E and the updated 2020 GHG emissions forecast is 509 MMTCO2e which took credit for certain GHG emission reduction measures already in place (e.g., the Renewables Portfolio Standard). As revised in 2014, the projected total business-as-usual emissions for year 2020 must be reduced by approximately 15 percent to achieve the CARB's approved 2020 emission target of 431 MMTCO2e. The

15 Discrete early actions are regulations to reduce GHG emissions adopted by the CARB Governing Board and enforceable by January 1, 2010.

16 CARB (October 2007).

17 CARB, "Climate Change Scoping Plan (a framework for change as approved December 2008), http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf (December 2008).

18 CARB, First Update to the Climate Change Scoping Plan, building on the framework pursuant to AB 32, May 2014.

Updated 2014 Scoping Plan also recommends a 40 percent reduction in GHG emissions from 1990 levels by 2030 and a 60 percent reduction in GHG emissions from 1990 levels by 2040.

The 2008 Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors. As stated in the 2008 Scoping Plan, the key elements of the strategy for achieving the 2020 GHG target include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
- Achieving a statewide renewable energy mix of 33 percent
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation

In addition, the 2008 Scoping Plan differentiates between "capped" and "uncapped" strategies. "Capped" strategies are subject to the proposed cap-and-trade program.[19] The 2008 Scoping Plan states that the inclusion of these emissions within the cap-and-trade program will help ensure that the year 2020 emission targets are met despite some degree of uncertainty in the emission reduction estimates for any individual measure. "Uncapped" strategies include additional reductions that will not be subject to the cap-and-trade emissions requirements. They are provided as a margin of safety to help achieve required GHG emission reductions.

SB 375. SB 375 was signed into law by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which contributes to 40 percent of the total GHG emissions in California. Automobiles and light trucks alone contribute almost 30 percent. SB

19 The cap-and-trade program is a central element of AB 32 and covers major sources of GHG emissions in the State such as refineries, power plants, industrial facilities, and transportation fuels. The regulation includes an enforceable GHG cap that will decline over time. CARB will distribute allowances, which are tradable permits, equal to the emission allowed under the cap.

375 indicates that GHGs from automobiles and light trucks can be reduced by new vehicle technology but significant reductions from changed land use patterns and improved transportation are necessary. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) it requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) it aligns planning for transportation and housing, and (3) it creates specified incentives for the implementation of the strategies.

Nonlegislative

California Air Pollution Control Officers Association (CAPCOA). On January 8, 2008, CAPCOA released a paper to provide a common platform of information and tools for public agencies. The disclaimer states that it is not a guidance document, but rather a resource to enable local decision makers to make the best decisions they can in the face of incomplete information during a period of change. The paper indicates that it is an interim resource and does not endorse any particular approach. It discusses three groups of potential thresholds, including a no significance threshold, a threshold of zero emissions, and a nonzero threshold.[20] The nonzero quantitative thresholds as identified in the paper range from 900 to 50,000 metric tons of CO2 per year. The CAPCOA paper also identified nonzero qualitative thresholds.[21]

Attorney General. The Office of the California Attorney General maintains a list of CEQA Mitigations for Global Warming Impacts on its website. The attorney general's office has listed some examples of types of mitigations that local agencies may consider to offset or reduce global warming impacts from a project. The attorney general's office states that the lists are examples and not intended to be exhaustive, but instead are provided as measures and policies that could be undertaken. Moreover, the measures cited may not be appropriate for every project, so the attorney general suggests that the lead agency should use its own informed judgment in deciding which measures it would analyze, and which measures it would require, for a given project. The mitigation measures are divided into two groups: generally applicable measures and general plan measures. The attorney general presents "generally applicable" measures in the following areas:

- Energy efficiency
- Renewable energy
- Water conservation and efficiency

20 California Air Pollution Control Officers Association, "CEQA & Climate Change, Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act," www.capcoa.org/ (January 2008).

21 A nonzero threshold could minimize the resources spent reviewing environmental analyses that do not result in real GHG reductions or to prevent the environmental review system from being overwhelmed.

- Solid waste measures
- Land use measures
- Transportation and motor vehicles
- Carbon offsets

South Coast Air Quality Management District

To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, South Coast Air Quality Management District (SCAQMD) staff convened a GHG CEQA Significance Threshold Working Group. The GHG significance threshold approach proposed by SCAQMD staff was presented to this Working Group in September 2010. The proposed approach includes a tiered series of thresholds to be applied based on the amount of GHG emissions generated by a proposed project and the type of project, as described below:

- **Tier 1**: Does the project qualify for any applicable statutory or categorical exemption under CEQA? If yes, no further action is required and climate change impacts would be less than significant.
- **Tier 2**: Is the project consistent with a GHG reduction plan? (The plan must be consistent with *CEQA Guidelines* Section 15064(h)(3), or 15152(s).) If yes, there is a presumption of less than significant impacts with respect to climate change.
- **Tier 3**: Is the project's incremental increase in GHG emissions below or mitigated to less than the significance screening level (10,000 MMTCO2E per year for industrial projects; 3,000 MMTCO2E for commercial/residential projects; 3,500 MMTCO2E for mixed use projects)? If yes, there is a presumption of less than significant impacts with respect to climate change.
- **Tier 4**: Does the project meet one of the following performance standards? If yes, there is a presumption of less than significant impacts with respect to climate change.

  Option #1: Achieve some percentage reduction in GHG emissions from a base case scenario, including land use sector reductions from AB 32 (e.g., 16 percent reduction as recommended by the CARB 2014 Updated Scoping Plan).

  Option #2: For individual project, achieve a project-level efficiency target of 4.8 MTCO2e per service population by 2020 or a target of 3.0 MTCO2e per service population by 2035. For plans, achieve a plan-level efficiency target of 6.6 MTCO2e per service population by 2020 or a target of 4.1 MTCO2e per service population by 2035.

  Option #3: Early compliance with AB 32 through early implementation of CARB's 2008 Scoping Plan Measures. The intent of this option is to accelerate GHG emission reduction from the various sectors subject to CARB's 2008 Scoping Plan to eliminate GHG emission.
- **Tier 5**: Projects should obtain GG emission offsets to reduce significant impacts. Offsets in combination with any mitigation measures should achieve the target thresholds for any of the above tiers. Otherwise, project impacts would remain significant.

As described above, for projects that are not exempt from review under CEQA, the Tier 2 threshold of significance is applied if the project is subject to a an adopted GHG reduction plan. If no GHG reduction plan applies to a proposed project, the Tier 3 threshold of significance includes quantified screening thresholds. The screening threshold for residential/commercial projects is 3,000 MTCO2E per year and 3,500 MTCO2E per year for mixed-use projects. If the amount of GHG emissions generated by a proposed project would be below these screening thresholds, the impact would not be considered significant. If the amount of GHG emissions generated by a proposed project would be above these screening thresholds, then additional analysis would need to be completed under Tier 4 to determine the level of significance. The Tier 4 threshold considers whether a proposed project would meet an applicable performance standard.

SCAQMD has not announced when a final version of these draft thresholds will be presented to the SCAQMD Governing Board for consideration for adoption.

SCAQMD has also adopted Rules 2700, 2701, and 2702 that establishes a GHG reduction program within SCAQMD's jurisdiction; however, GHG emission reduction protocols pursuant to these rules have only been established for boilers and process heaters, forestry, and manure management reduction projects.

ENVIRONMENTAL IMPACTS

Methodology

Air Quality

Short-term emissions of criteria air pollutants (e.g., CO, SO_X, PM10, and PM2.5) generated by project construction and ozone precursors (e.g., ROG and NO_X) were assessed in accordance with SCAQMD-recommended methods. Where quantification was required, these emissions were modeled using the CARB-approved California Emissions Estimator Model 2013.2.2 (CalEEMod) computer program as recommended by the SCAQMD. CalEEMod is designed to model construction emissions for land use development projects and allows for the input of project specific information. Project-generated emissions were modeled based on general information provided in **Section 3.0, Project Description** and SCAQMD-recommended and default CalEEMod model settings to estimate reasonable worst-case conditions. Emission modeling assumes construction to commence in April 2015 and last approximately 18 months.

The Project would be constructed in three phases: (1) demolition; (2) site preparation/excavation; and (3) construction of new building and site improvements.

Phase I of construction would include the demolition and removal of the single-story retail building (Office Depot), the associated parking lot, and the apartment building and garage on the western edge of the property. Demolition would occur over a 1-month period and approximately 11,720 cubic yards of demolition material would be generated. This material would be hauled north on N. Glendale Avenue to SR 134 or west along West Colorado Street to I-5 and would be disposed of at the School Canyon Landfill in Glendale.

Phase II of construction would involve site preparation/grading activities including the removal of existing fill materials over a 6-month period. Grading on the Project site would require excavation up to depths at 30 feet below the ground surface, and it is anticipated that 32,344 cubic yards of earth material would be removed from the site. Material would be hauled via the same route to the same location as demolition debris. Heavy construction equipment would be located on site during site preparation/grading activities and would not travel to and from the Project site on a daily basis.

Phase III would include construction of the subterranean parking and above-grade building and all related site improvements. It is anticipated that equipment needs associated with above-grade construction activities would include crane and miscellaneous machinery and related equipment. The use of material delivery trucks and other miscellaneous trucks are anticipated during this phase of construction. This phase of construction is expected to be completed in approximately 11 months.

The emission calculations assume the use of standard construction practices, such as compliance with SCAQMD Rule 402 (Nuisance) and Rule 403 (Fugitive Dust), to minimize the generation of fugitive dust. Compliance with Rule 402 and 403 are mandatory for all construction projects. In the CalEEMod model, the emission calculations take into account compliance with Rule 402 and Rule 403 by incorporating the following measures:

- Watering of exposed surfaces and unpaved roads three times daily, which is estimated to reduce fugitive dust emissions from this source (both PM10 and PM2.5) by 61 percent, per guidance from the SCAQMD.
- Reduction of vehicle speeds to 15 mile per hour on unpaved roads.
- Replaced of onsite ground cover within 30 days of completion of construction activities.

Project-generated, regional area and mobile-source emissions of criteria air pollutants and ozone precursors were also modeled using the CalEEMod computer program. CalEEMod allows land use selections that include project location specifics and trip generation rates. CalEEMod accounts for area-source emissions from the use of natural gas, landscape maintenance equipment, and consumer products and from mobile-source emissions associated with vehicle trip generation.

The analysis of daily operational emissions has been prepared using the data and methodologies identified in the SCAQMD's CEQA Air Quality Handbook and current motor vehicle emission factors in the CalEEMod. Trip rates for these land uses were obtained from the traffic memo for the Project (see **Appendix 4.8**). As shown in the traffic memo, the total number of trips associated with the proposed Project would increases in comparison with the existing number of trips associated with the current office supply business. Existing operational emissions of criteria air pollutants and ozone precursors associated with the office supply business were modeled using CalEEMod. Existing operational emissions were then compared with operational emissions associated with the Project by taking the difference between the two.

Other air quality impacts (i.e., CO, TACs, and odors) were assessed in accordance with methodologies recommended by SCAQMD.

Greenhouse Gases

GHG emissions were modeled using the CalEEMod computer program and emission factors from California Climate Action Registry (CCAR), as recommended by SCAQMD, which estimates construction and operations emissions of carbon dioxide, among other air pollutants. Project-generated emissions were modeled based on general information provided in **Section 3.0**. Existing operational GHG emissions associated with the office supply business were also modeled using CalEEMod, and compared with existing operational emissions associated with the Project.

The Project would become operational in 2016 and would result in direct annual emissions of GHGs during operation. Operational emissions would be generated by both area and mobile sources because of normal day-to-day activities. Area source emissions would be generated by the consumption of natural gas for space and water heating devices (including residential use water heater and boilers). Area source emissions are based on emission factors contained in the CalEEMod model. Mobile emissions would be generated by the motor vehicles traveling to and from the Project site. Trip generation rates provided in the traffic report for the Project were used to estimate the mobile source emissions.

The Project would also result in indirect GHG emissions due to the electricity demand, water consumption, and waste generation. The emission factor for CO2 due to electrical demand from Glendale Water and Power, the electrical utility serving the Project, was selected in the CalEEMod model. Electricity consumption was based on default data found in CalEEMod for the respective land use types. In addition to electrical demand, the Project would also result in indirect GHG emissions due to water consumption, wastewater treatment, and solid waste generation. The estimate of Project water

demand, wastewater generation, and solid waste generation is described in **Section 4.9, Utilities and Service Systems**, of the Draft EIR.

The Project incorporates design features that would reduce GHG emissions. The following is a list of project design features that would reduce GHG emissions:

- Residential Density: High-density residential developments would reduce the number of project generated vehicles trips.
- Public Transit: Residential land uses within 0.25 mile of a public transit stop would reduce the number of project-generated vehicles trips and vehicle miles traveled.
- Energy Efficiency: The Project would be designed to meet the requirements of Glendale Ordinances 5714 and 5736, which adopt the California Green Building Standards (CALGreen).
- The Project would be designed to reduce water consumption compared to conventionally designed projects of similar size and scope. Such features would include low flow faucets, toilets, shower, and water efficient irrigation systems.
- The Project would be designed to reduce solid waste generation by including a recycling and composting program per City of Glendale requirements.

Thresholds of Significance

Air Quality

In order to assist in determining whether a project would have a significant effect on the environment, the City finds a project may be deemed to have a significant air quality impact if it would:

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

Under Section 15064.7 of the State *CEQA Guidelines*, the Lead Agency may rely on the threshold of significance criteria established by the applicable air quality management district or air pollution control district. The SCAQMD is an expert commenting agency on air quality within its jurisdiction or impacting its jurisdiction as has established thresholds within their CEQA Air Quality Handbook. Under the Federal CAA, the SCAQMD has adopted federal attainment plans for O3 and PM10. The SCAQMD reviews

projects to ensure that they would not: (1) cause or contribute to any new violation of any air quality standard; (2) increase the frequency or severity of any existing violation of any air quality standard; or (3) delay timely attainment of any air quality standard or any required interim emission reductions or other milestones of any federal attainment plan.

Regional Air Quality Thresholds

The *CEQA Air Quality Handbook* provides significance thresholds for both construction and operation of projects within the SCAQMD jurisdictional boundaries. If the SCAQMD thresholds are exceeded, a potentially significant impact could result. However, ultimately the lead agency determines the thresholds of significance for impacts. If a project proposes development in excess of the established thresholds, as outlined in **Table 4.2-6, South Coast Air Quality Management District Emissions Thresholds**, a significant air quality impact may occur and additional analysis is warranted to fully assess the significance of impacts.

Table 4.2-6
South Coast Air Quality Management District Emissions Thresholds (pounds/day)

Pollutant	Construction	Operational
Nitrogen dioxide (NO2)	100	55
Reactive organic gases (ROG)	75	55
Carbon monoxide (CO)	550	550
Sulfur dioxide (SO2)	150	150
Respirable particulate matter (PM10)	150	150
Fine particulate matter (PM2.5)	55	55

Source: SCAQMD, CEQA Air Quality Handbook(November 1993).

Local Carbon Monoxide Thresholds

The significance of localized project impacts depends on whether ambient CO levels in the vicinity of the proposed project are above or below state and federal CO standards. If the project causes an exceedance of either the State 1-hour or 8-hour CO concentrations, the project would be considered to have a significant local impact. If ambient levels already exceed a state or federal standard, then project emissions are considered significant if they increase 1-hour CO concentrations by 1.0 ppm or more, or 8 hour CO concentrations by 0.45 ppm or more pursuant to SCAQMD Rule 1303(b).

Localized Significance Thresholds

The SCAQMD recommends the evaluation of localized air quality impacts to sensitive receptors in the immediate vicinity of the Project site as a result of construction activities. This evaluation requires that anticipated ambient air concentrations, determined using a computer-based air quality dispersion model, be compared to localized significance thresholds for PM10, PM2.5, NO2, and CO. The significance threshold for PM10 represents compliance with Rule 403 (Fugitive Dust), while the thresholds for NO2 and CO represent the allowable increase in concentrations above background levels in the vicinity of the Project that would not cause or contribute to an exceedance of the relevant ambient air quality standards. The significance threshold for PM2.5 is intended to constrain emissions so as to aid in progress toward attainment of the ambient air quality standards.

For project sites of 5 acres or less, the SCAQMD Localized Significance Threshold (LST) Methodology includes screening tables that can be used to determine the maximum allowable daily emissions that would satisfy the localized significance criteria (i.e., not cause an exceedance of the applicable concentration limits) without project-specific dispersion modeling. The allowable emission rates depend on (a) the SRA in which the project is located, (b) the size of the project site, and (c) the distance between the project site and the nearest sensitive receptor (e.g., residences, schools, hospitals).

The Project site is 1.78-acres in size. The nearest sensitive receptors are multifamily and single-family residences to the north of the site. The distance used to determine the mass-rate emissions from the screening tables is 25 meters (82 feet), as specified in the LST Methodology. The allowable mass-rate emissions were linearly interpolated for a 1.78-acre site using the specified thresholds for 1- and 2-acre sites. The applicable thresholds are shown in **Table 4.2-7, Localized Significance Thresholds for a 1.78-Acre Site Located in SRA 7 (East San Fernando Valley)**. It should be noted that LST Methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources traveling over the roadways.

Table 4.2-7
Localized Significance Thresholds for a 1.78-Acre Site Located in SRA 7
(East San Fernando Valley)

Pollutant	LST Threshold (pounds per day)
Construction	
Nitrogen dioxide (NO2)	106.5
Carbon monoxide (CO)	722.6
Respirable particulate matter (PM10)	6.1
Fine particulate matter (PM2.5)	3.7
Operational	
Nitrogen dioxide (NO2)	106.5
Carbon monoxide (CO)	722.6
Respirable particulate matter (PM10)	1.7
Fine particulate matter (PM2.5)	1.7

Cumulative Emissions Thresholds

The SCAQMD's *CEQA Air Quality Handbook* identifies several methods to determine the cumulative significance of land use projects (i.e., whether the contribution of a project is cumulatively considerable). However, the SCAQMD no longer recommends the use of these methodologies. Instead, the SCAQMD recommends that any construction-related emissions and operational emissions from individual development projects that exceed the project-specific mass daily emissions thresholds identified previously also be considered cumulatively considerable.[22] The SCAQMD neither recommends quantified analyses of the emissions generated by a set of cumulative development projects nor provides thresholds of significance to be used to assess the impacts associated with these emissions.

Greenhouse Gases

For the purpose of this analysis, the following qualitative thresholds of significance, as suggested by the State *CEQA Guidelines* (Appendix G), have been used to determine whether implementation of the Project would result in significant GHG or climate change impacts.

A GHG or climate change impact is considered significant if the proposed Project would involve either of the following:

22 *White Paper on Regulatory Options for Addressing Cumulative Impacts from Air Pollution Emissions,* SCAQMD Board Meeting (September 5, 2003, Agenda No. 29, Appendix D, p. D-3).

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs

As indicated previously, the SCAQMD convened a GHG CEQA Significance Threshold Working Group in order to provide guidance to local lead agencies on determining the significance of GHG emissions identified in CEQA documents. The goal of the working group was to develop and reach consensus on an acceptable CEQA significance threshold for GHG emissions that would be utilized on an interim basis until the CARB, or some other state agency, develops statewide guidance on assessing the significance of GHG emissions under CEQA. In December 2008, staff presented the SCAQMD Governing Board with a significance threshold of 10,000 MMTCO2E for stationary source projects where SCAQMD is the lead agency. To date, the SCAQMD has not formally adopted any threshold or methodology for residential and commercial land use projects. The Working Group has released draft documents that recommend all new land use projects not exceed a screening threshold of 3,000 MMTCO2E per year. Although a significance threshold has not been formally adopted, the Working Group draft recommendations represent the best available information with which to evaluate project significance with respect to GHG emissions and climate change for projects located in the South Coast region. This screening threshold is used in this EIR for the purposes of determining significance.

Project Impacts

Air Quality

Threshold: Conflict with or obstruct the implementation of the applicable air quality plan.

The 2012 AQMP was prepared to accommodate growth, to reduce the high levels of pollutants within the areas under the jurisdiction of SCAQMD, to return clean air to the region, and to minimize the impact on the economy. Projects that are considered consistent with the AQMP would not interfere with attainment because this growth is included in the projections utilized in the formulation of the AQMP. Therefore, projects, uses, and activities that are consistent with the applicable assumptions used in the development of the AQMP would not jeopardize attainment of the air quality levels identified in the AQMP, even if they exceed the SCAQMD's recommended daily emissions thresholds.

Demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment), developed by SCAG for their 2012 Regional Transportation Plan (RTP) were used to estimate future emissions within the 2012 AQMP. Projects that are consistent with the growth projections are considered consistent with the AQMP. The Project would result in population and employment growth for the region. According to the California Department of Finance estimates, the

current population (2014) within the City of Glendale is 195,799 residents.[23] Based on SCAG data, the population projections used to estimate emissions in the 2012 AQMP for year 2020 anticipated a population of 198,900 within the City of Glendale. The Project would generate approximately 468 residents, which would account for approximately 15 percent of the anticipated increase of residents within the City between 2014 and 2020.[24] These totals are within the growth projections for the City of Glendale as adopted by SCAG. Because the SCAQMD has incorporated these same projections into the AQMP, the Project would be consistent with the projections in the 2012 AQMP.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less than significant.

Threshold: **Violate any air quality standard or contribute substantially to an existing or projected air quality violation.**

Construction

Project construction is anticipated to last approximately 18 months and is expected to commence on or about April 2015. The estimated maximum daily emissions during Project construction are listed in **Table 4.2-8, Construction Emissions (pounds/day).** These estimates are based on the expected location, size, and development of the Project. The analysis assumes that all of the construction equipment and activities would occur continuously over the day and that activities would overlap. In reality, this would not occur, as most equipment would operate only a fraction of each workday and many of the activities would not overlap on a daily basis. Therefore, **Table 4.2-8** represents a worst-case scenario for construction activities. The modeling also incorporates standard compliance with SCAQMD rules and regulations, as previously discussed in **Methodology.**

Table 4.2-8
Construction Emissions (pounds/day)

Source	VOC	NOx	CO	SOx	PM10	PM2.5
Maximum*	71.29	13.79	28.32	0.10	5.13	2.68
SCAQMD threshold	75	100	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

*Note: Refer to Modeling in **Appendix 4.2, Air Emissions Modeling.***
***** Maximum emissions represent the single day with the highest emissions throughout the construction period from 2015-2016.*

23 California Department of Finance, "E-5: City/County Population and Housing Estimates" (January 1, 2014).
24 468 Project residents / 3,101 (the increase in residents in Glendale between 2014 and 2020) = 0.15

As indicated in **Table 4.2-8,** construction of the Project would result in a maximum daily emission of 71.29 pounds/day of VOC, 13.79 pounds/day of NOx, 28.32 pounds/day of CO, 0.10 pounds/day of SOx, 5.13 pounds/day of PM10, and 2.68 pounds/day of PM2.5. The maximum daily emission on any given day during construction would not exceed SCAQMD thresholds for criteria pollutants. Although emissions for VOC, PM10 and PM2.5 are below SCAQMD thresholds, standard measures in compliance with SCAQMD rules and regulations would be implemented.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less than significant.

Operational

The estimated operational emissions are based upon development of the proposed land uses on the Project site, taking into account existing land uses, and are presented in **Table 4.2-9, Estimated Operational Emissions.** As shown, the net emissions associated with the Project would not exceed the SCAQMD's recommended operational emission thresholds. As a result, the operational impacts associated with the Project would be considered less than significant.

Table 4.2-9
Estimated Operational Emissions (pounds/day)

Source	VOC	NOx	CO	SOx	PM10	PM2.5
Project operational emissions	16.35	18.60	89.75	0.15	10.37	3.02
Existing operational emissions	6.44	10.33	43.55	0.07	4.94	1.43
Net total emissions	**9.91**	**8.27**	**46.20**	**0.08**	**5.43**	**1.59**
SCAQMD threshold	55	55	550	150	150	55
Threshold exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

*Source: Refer to Modeling in **Appendix 4.2, Air Emissions Modeling.***

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less than significant.

Threshold: **Expose sensitive receptors to substantial pollutant concentrations.**

Localized Significance Threshold

The SCAQMD recommends the evaluation of localized NO_X, CO, PM 10, and PM2.5 impacts as a result of onsite construction and operational activities to sensitive receptors in the immediate vicinity of the Project site. This analysis determines the ambient air quality impacts due to construction and operational activities on the day with the highest estimated daily mass emission rates as presented in **Table 4.2-7**. The Project-specific localized significance thresholds for SRA 7 (East San Fernando Valley) are shown in **Table 4.2-10, LST Worst-Case Emissions**, and are compared with the maximum daily on-site construction and operational emissions.

Table 4.2-10
LST Worst-Case Emissions (pounds/day)

Source	NOx	CO	PM10	PM2.5
Construction				
Total mitigated maximum emissions	32.93	23.35	2.70	1.67
LST threshold	106.5	722.6	6.1	3.7
Threshold exceeded?	**No**	**No**	**No**	**No**
Operational				
Area/energy emissions*	0.72	14.59	0.12	0.12
LST threshold	106.5	722.6	1.7	1.0
Threshold exceeded?	**No**	**No**	**No**	**No**

*Note: Refer to Modeling in **Appendix 4.2, Air Emissions Modeling.***
** Net total, taking existing operational emissions into account.*

As shown in **Table 4.2-10,** construction emissions would not exceed LSTs within SRA 7 for PM10 and PM2.5. LSTs for PM10 and PM2.5 would be the greatest during the demolition and grading phases which are anticipated to take place over the first five to seven months of construction. All other construction emissions, as well as operational emissions, would not exceed the LSTs for SRA 7. Therefore, potential construction and operation LST impacts would be considered less than significant.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less than significant.

Localized Carbon Monoxide Hotspots

CO is produced in greatest quantities from vehicle combustion, and is usually concentrated at or near ground level because it does not readily disperse into the atmosphere. As a result, potential air quality impacts to sensitive receptors are assessed through an analysis of localized CO concentrations. Areas of vehicle congestion have the potential to create "pockets" of CO called "hotspots." These pockets have the potential to exceed the state ambient air quality 1-hour standard of 20 ppm or the 8-hour standard of 9.0 ppm. Note that the federal levels are based on 1- and 8-hour standards of 35 and 9 ppm, respectively. Thus, an exceedance condition would occur based on the state standards prior to exceedance of the federal standard. As such, exceeding the State ambient air quality 1-hour standard of 20 ppm or the 8-hour standard of 9.0 ppm would constitute a significant air quality impact from the creation of substantial concentrations of CO.

The SCAQMD suggests that localized CO impacts be evaluated at intersections due to increases in project-related off-site mobile sources. The SCAQMD recommends performing a localized CO impact analysis for intersections that change from level of service (LOS) C to D as a result of the project and for all intersections rated D or worse where the project increases the volume-to-capacity ratio by 2 percent or more. No Project in the vicinity of the Project falls under the SCAQMD's criteria requiring a more detailed localized CO impact analysis. As a result, no significant Project-related impacts would occur relative to future carbon monoxide concentrations.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less than significant.

Toxic Air Contaminants

California Accidental Release Prevention (CalARP) Program

Projects that use hazardous materials or emit TACs have the potential to expose sensitive receptors to adverse health impacts. The residential land uses associated with the proposed Project are not anticipated to use hazardous or acutely hazardous materials in appreciable quantities. Hazardous substances currently are regulated under the California Accidental Release Prevention (CalARP) Program. The CalARP Program satisfies the requirements of the Federal Risk Management Plan Program, and contains additional state requirements. The CalARP Program applies to regulated substances in excess of specific quantity thresholds. The majority of the substances have thresholds in the range of 100 to 10,000 pounds. The residential uses associated with the Project may contain small amounts of

hazardous substances such as household cleaners and other products. This type of hazardous material would not emit substantial amounts of toxic air emissions on the Project site. Accordingly, the Project would not result in a significant impact with respect to hazardous materials.

SCAQMD Rule 1401

The proposed residential land uses may potentially emit trace amounts of TACs but would not exceed the thresholds contained in SCAQMD Rule 1401 (New Source Review of Toxic Air Contaminants) and would not result in an incremental increase in cancer risk of 10 in 1 million or more or a Hazard Index of 1.0 or more. Diesel-fueled waste-hauling trucks would drive to and from the Project site resulting in emissions of diesel particulate matter. However, the number of trucks would be equal to that occurring in other similarly developed residential neighborhoods throughout the region. Residential land uses are not substantial sources of TACs as well. Therefore, the site is not expected to generate emissions of TACs that would exceed the SCAQMD's cancer risk threshold of 10 in 1 million or the non-cancer Hazard Index threshold of 1.0.

CARB has determined that adverse health effects are generally elevated near heavily traveled roadways. The CARB guidance document, *Air Quality and Land Use Handbook*, recommends that lead agencies, where possible, avoid sitting new sensitive land uses within 500 feet of a freeway,[25] an urban road with 100,000 vehicles per day, or a rural road with 50,000 vehicles per day. This recommendation is not mandated by State law, but only serves as a general guidance to lead agencies when considering land use projects. The *Air Quality and Land Use Handbook* states that it is up to lead agencies to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues. The Project would not locate sensitive land uses within 500 feet of freeways, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day. For these reasons, no significant impacts are anticipated with respect to TACs.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less than significant.

25 CARB, Air Quality and Land Use Handbook (2005), 8–9. The 2002 study of impacts along the San Diego (I-405) Freeway and the Long Beach (I-710) Freeway cited by CARB in its Air Quality and Land Use Handbook found a substantial reduction in pollutant concentrations, relative exposure, and health risk beyond 300 feet.

Threshold: Create objectionable odors affecting a substantial number of people.

During Project construction, certain pieces of construction equipment could emit odors associated with exhaust. However, odors emitted from certain pieces of construction equipment would dissipate quickly and be short term in duration. Odors resulting from spray coating applications of paint and related materials during construction would be regulated by SCAQMD Rule 481. This rule imposes equipment and operational restrictions during construction for all spray painting and spray coating operations. Compliance with SCAQMD rules and permit requirements would ensure that no objectionable odors are created during construction. Therefore, impacts from odors during construction would be less than significant.

According to the SCAQMD, "while almost any source may emit objectionable odors, some land uses will be more likely to produce odors…because of their operation." Land uses that are more likely to produce odors include agriculture, chemical plants, composting operations, dairies, fiberglass molding, landfills, refineries, rendering plants, rail yards, and wastewater treatment plants. The Project would not include any of these land uses. Consequently, no significant impacts from odors are anticipated from the Project.

Any unforeseen odors generated by the Project will be controlled in accordance with SCAQMD Rule 402 (Nuisance). Rule 402 prohibits the discharge of air contaminants that cause "injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property." Failure to comply with Rule 402 could subject the offending facility to possible fines and/or operational limitations in an approved odor control or odor abatement plan.

The Project would develop additional urban residential and commercial uses on the Project site, similar to uses already existing in the surrounding area, and would not include uses that would generate significant objectionable odors. Operation of the Project would involve the disposal of refuse. This refuse would be disposed of in outdoor trash receptacles and could generate occasional odors pending regular collection and ultimate disposal into a sanitary landfill. However, Project-generated refuse would be disposed into appropriate garbage collection containers, which would be covered and enclosed as required by the City of Glendale. Additionally, garbage collection containers would be emptied on a regular basis, in compliance with City of Glendale regulations for the collection of solid waste. As a result, impacts from odors would be less than significant.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance after Mitigation: Less than significant.

Greenhouse Gases

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

As described previously, the draft SCAQMD guidelines recommend that all land use or mixed-use projects meet a threshold of 3,000 MMTCO2E. If a project exceeds the threshold, it should demonstrate a reduction in GHG emissions equivalent to AB 32 or meet a per service population GHG intensity of 4.8 MMTCO2E.

The Project would result in short-term emissions of GHGs during construction. Site-specific or project-specific data were used in the CalEEMod model where available. Although GHGs are generated during construction and are accordingly considered one-time emissions, it is important to include construction-related GHG emissions when assessing all of the long-term GHG emissions associated with a project. Therefore, current practice is to annualize construction-related GHG emissions over a project's lifetime in order to include these emissions as part of a project's annualized lifetime total emissions, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies. A project lifetime has generally been defined as 30 years. In accordance with this methodology, the estimated Project's construction GHG emissions have been annualized over a 30-year period and are included in the annualized operational GHG emissions.

The annual net GHG emissions associated with the operation of the Project when compared to the existing on-site uses are provided in **Table 4.2-11, Estimated Operational Greenhouse Gas Emissions**. The sum of the direct and indirect emissions associated with the Project is compared with the SCAQMD's screening threshold of significance for mixed-use and all land use projects, which is 3,000 MTCO2E per year. As shown in **Table 4.2-11**, the Project would not result in a significant impact with respect to GHG emissions.

Table 4.2-11
Estimated Operational Greenhouse Gas Emissions

GHG Emissions Source	Project Emissions (MTCO2E /year)	Existing Emissions (MTCO2E /year)	Difference (Project – Existing Emissions)
Construction (amortized)	23.75	-	-
Operational (mobile) sources[1]	2,625.66	1,090.30	1,535.36
Area sources	3.11	0.17	2.94
Energy	671.50	237.18	434.32
Waste	68.83	15.44	53.39
Water	45.58	10.65	34.93
Total	**3,438.43**	**1,353.74[2]**	**2,060.94**

*Source: CalEEMod emissions calculations are provided in **Appendix 4.2, Air Emissions Modeling.***
1 *N2O emissions account for 0.06 MTCO2E per year Project emissions, 0.05 MTCO2E Existing emissions*
2 *Existing emissions do not include construction.*

Taking the existing office supply superstore and 10 multifamily residential units into account, the Project would result in a net increase of 2,061 MTCO2e per year. Since the net increase in GHG emissions would be below the 3,000 MTCO2e per year threshold, the Project would result in less than significant impacts with respect to GHG emissions.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less than significant.

Cumulative Impacts

Air Quality

Threshold: **Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors).**

In large part, the SCAQMD 2012 AQMP was prepared to accommodate growth, to meet state and federal air quality standards, and to minimize the fiscal impact that pollution control measures have on the local economy. According to the SCAQMD *CEQA Air Quality Handbook*, projects that are within the mass emission thresholds identified above should be considered less than significant on a cumulative

basis unless there is other pertinent information to the contrary.[26] As shown in **Table 4.2-8** and **Table 4.2-9**, construction and operational emissions would not exceed the SCAQMD project-level thresholds of significance. Therefore, the Project would not be cumulatively considerable and would result in a less than significant impact on a cumulative basis.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance after Mitigation: Less than significant.

Greenhouse Gases

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

The goal of AB 32 is to reduce statewide GHG emissions to 1990 levels by 2020. In December 2008, CARB adopted the *Climate Change Scoping Plan*, which details strategies to meet that goal. The 2008 Scoping Plan instructs local governments to establish sustainable community strategies to reduce GHG emissions associated with transportation, energy, and water, as required under SB 375. Planning efforts that lead to reduced vehicle trips while preserving personal mobility should be undertaken in addition to programs and designs that enhance and complement land use and transit strategies. The 2008 Scoping Plan also recommends energy-efficiency measures in buildings such as maximizing the use of energy efficient appliances and solar water heating as well as complying with green building standards that result in decreased energy consumption compared to Title 24 building codes. In addition, the 2008 Scoping Plan encourages the use of solar photovoltaic panels and other renewable sources of energy to provide clean energy and reduce fossil-fuel based energy. The CARB 2014 Updated Scoping Plan was updated in May 2014, which adjusted the statewide GHG emissions reduction goals to achieve 1990 levels.

In addition to the measures listed in the *Climate Change Scoping Plan*, other state offices have provided recommended measures that would assist lead agencies in determining consistency with the state's GHG reduction goals. The California Attorney General's Office (AGO) has stated that lead agencies can play an important role in "moving the State away from 'business as usual' and toward a low-carbon future."[27] The AGO has released a guidance document that provides information to lead agencies that

26 South Coast Air Quality Management District, *CEQA Air Quality Handbook* (9–12).

27 California Office of the Attorney General, "The California Environmental Quality Act: Addressing Global Warming Impacts at the Local Agency Level" (2008).

may be helpful in carrying out their duties under CEQA with respect to GHGs and climate change impacts. Provided in the document are measures that can be included as project design features, required changes to the project, or mitigation measures at the project level and at the general-plan level. The measures are not intended to be exhaustive and may not be appropriate for every project or general plan. The AGO affirms that "the decision of whether to approve a project—as proposed or with required changes or mitigation—is for the local agency, exercising its informed judgment in compliance with the law and balancing a variety of public objectives."

The Project would incorporate measures that reduce GHG emissions compared to a conventional project of similar size and scope, as previously discussed in Methodology. The Project would incorporate energy and water efficiency design features to enhance efficiency in all aspects of a building's life-cycle. These designs would increase the structures energy efficiency, water efficiency, and overall sustainability. The Project is also located in an urban area that would reduce vehicle trips and vehicles miles traveled due to the urban infill characteristics and proximity to public transit stops. These measures and features are consistent with existing recommendations to reduce GHG emissions. The Project would emit net emissions less than 3,000 MTCO2E of GHG per year screening threshold, which in of itself is considered a less than significant impact. Therefore, the Project would result in a less than significant cumulative impact for GHG emissions.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance after Mitigation: Less than significant.