Section 5.6
AIR QUALITY

5.6 AIR QUALITY

This section of the EIR analyzes the potential impacts to air quality resulting from implementation of the proposed project. The analysis presented in this section is based on information and conclusions contained in the *Air Quality Impact Analysis* report performed by LSA Associates, Inc. for the proposed project in June 2008.[1] The *Air Quality Impact Analysis* report is intended to satisfy the requirements for a project-specific air quality impact analysis by examining the impacts of the proposed project and evaluating the measures recommended to be incorporated as part of the project design. This section describes the regulatory framework for air quality, summarizes the physical setting of the project area, provides data on existing air quality, evaluates potential air quality impacts associated with the proposed project, and identifies measures recommended to limit potential impacts. Modeled air quality levels utilized in the *Air Quality Impact Analysis* are based upon vehicle data and project trip generation included in the *Traffic Impact Analysis* report prepared for the proposed project by Austin-Foust Associates, Inc. Refer to Section 5.4, Traffic and Circulation, for a discussion of traffic-related impacts and mitigation measures. The *Air Quality Impact Analysis* report is included in its entirety in Appendix F1.

5.6.1 ENVIRONMENTAL SETTING

REGULATORY FRAMEWORK

Federal Regulations/Standards

Pursuant to the Federal Clean Air Act (CAA) of 1970, the U.S. Environmental Protection Agency (EPA) established national ambient air quality standards (NAAQS). The NAAQS were established for six major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health.

The NAAQS are two-tiered: primary, to protect public health, and secondary, to prevent degradation of the environment (e.g., impairment of visibility, damage to vegetation and property). The six criteria pollutants are ozone (O_3), carbon monoxide (CO), respirable particulate matter (PM_{10}), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). The primary standards for these pollutants are shown in *Table 5.6-1*, *Ambient Air Quality Standards*, and the health effects from exposure to the criteria pollutants are described in *Table 5.6-2*, *Health Effects Summary of the Major Criteria Air Pollutants*. The concentration standards were set by the EPA at a level that protects public health with an adequate margin of safety; therefore, these health effects would not occur unless the standards are exceeded by a large margin. In July 1997, the EPA adopted new standards for eight-hour O_3 and fine particulate matter ($PM_{2.5}$) and in December 2005, adopted new standards for course particulate matter (PM_{10}), as shown in *Table 5.6-1*. The following describes the criteria pollutants in detail.

[1] LSA Associates, Inc. *Air Quality Impact Analysis, Henry Mayo Newhall Memorial Hospital Master Plan, City of Santa Clarita.* June 2008.

Table 5.6-1
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3, 5]	Secondary[3, 6]	Method[7]
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		--		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (56 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.18 ppm (338 µg/m^3)		—		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	—	Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	—	
	3-Hour	—		—	0.5 ppm (1300 µg/m^3)	
	1-Hour	0.25 ppm (655 µg/m^3)		—	—	
Lead[8] (Pb)	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	
Visibility-Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more (0.07-30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[8]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Table 5.6-1 (Continued)
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3, 5]	Secondary[3, 6]	Method[7]

Source: CARB, April 2008.

1 California standards for ozone; carbon monoxide (except Lake Tahoe); sulfur dioxide (1- and 24-hour); nitrogen dioxide; suspended particulate matter - PM_{10}, $PM_{2.5}$ and visibility reducing particles; are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth-highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the EPA for further clarification and current federal policies.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25˚C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25˚C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Any equivalent procedure that can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7 Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8 The ARB 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.

Table 5.6-2
Health Effects Summary of the Major Criteria Air Pollutants

Pollutant	Health Effects	Examples of Sources
Particulate Matter (PM_{10}: less than or equal to 10 microns)	Increased respiratory disease Lung damage Premature death	Cars and trucks, especially diesels Fireplaces, wood stoves Windblown dust from roadways, agriculture, and construction
Ozone (O_3)	Breathing difficulties Lung damage	Formed by chemical reactions of air pollutants in the presence of sunlight; common sources are motor vehicles, industries, and consumer products
Carbon Monoxide (CO)	Chest pain in heart patients Headaches, nausea Reduced mental alertness Death at very high levels	Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Nitrogen Dioxide (NO_2)	Lung damage	See carbon monoxide sources
Toxic Air Contaminants	Cancer Chronic eye, lung, or skin irritation Neurological and reproductive disorders	Cars and trucks, especially diesels Industrial sources such as chrome platers Neighborhood businesses such as dry cleaners and service stations Building materials and products

Source: CARB, 2005.

Ozone (O_3)

Ozone is a colorless gas with a pungent odor. In general, it is not directly emitted, but is formed in the atmosphere as the result of sunlight acting on emissions of nitrogen oxides and organic gases such as hydrocarbons.[2]

Health Effects

Individuals exercising outdoors, children and people with preexisting lung disease such as asthma and chronic pulmonary lung disease are considered to be the most susceptible sub-groups for ozone effects. Short-term exposures (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in high ozone communities.

Ozone exposure under exercising conditions is known to increase the severity of the above mentioned observed responses. Animal studies suggest that exposures to a combination of pollutants which include ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.[3]

Particulate Matter (PM_{10} and $PM_{2.5}$)

Suspended particulate matter (PM) is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size, and chemical composition, and can be made up of many different materials such as metals, soot, soil, and dust. 'Inhalable' PM consists of particles less than 10 microns in diameter, and is defined as 'suspended particulate matter' or 'PM_{10}.' Fine particles are less than 2.5 microns in diameter ($PM_{2.5}$).[4]

Health Effects

A consistent correlation between elevated ambient fine particulate matter (PM_{10} and $PM_{2.5}$) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in life span, and an increased mortality from lung cancer.

2 California Air Resources Board. *Ozone*. World Wide Web: http://www.arb.ca.gov/research/aaqs/caaqs/ozone-1/ozone-1.htm. Accessed January 8, 2004.

3 South Coast Air Quality Management District. *2003 Air Quality Management Plan (AQMP)*. World Wide Web: http://www.aqmd.gov/aqmp/AQMD03AQMP.htm. Pages 2-8. Accessed December 22, 2003.

4 California Air Resources Board. *Particulate Matter*. World Wide Web: http://www.arb.ca.gov/research/aaqs/caaqs /pm/pm.htm. Accessed January 8, 2004.

Daily fluctuations in fine particulate matter concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long-term exposure to particulate matter. The elderly, people with pre-existing respiratory and/or cardiovascular disease and children appear to be more susceptible to the effects of PM_{10} and $PM_{2.5}$.[5]

Carbon Monoxide (CO)

CO is a colorless, odorless gas. It results from the incomplete combustion of carbon-containing fuels such as gasoline or wood, and is emitted by a wide variety of combustion sources.[6]

Health Effects

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of worsening oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport by competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include patients with diseases involving heart and blood vessels, fetuses (unborn babies), and patients with chronic hypoxemia (oxygen deficiency) as seen in high altitudes.

Reduction in birth weight and impaired neurobehavioral development has been observed in animals chronically exposed to CO resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels. These include pre-term births and heart abnormalities. Additional research is needed to confirm these results.[7]

Nitrogen Dioxide (NO_2)

Nitrogen dioxide (NO_2) is a pungent gas that is responsible for the reddish-brown tinge of smoggy air in South Coast Air Basin. Sunlight causes NO_2 to react with organic gases to form ozone. NO_2 is one of the nitrogen oxides (NO_x) that are emitted from high-temperature combustion processes, such as those occurring in automobiles and power plants. Home water heaters and gas stoves also produce NO_2.[8]

5 South Coast Air Quality Management District. *2003 AQMP*. World Wide Web: http://www.aqmd.gov/aqmp/AQMD03AQMP.htm. Pages 2-14. Accessed December 22, 2003.

6 California Air Resources Board. *Carbon Monoxide*. World Wide Web: http://www.arb.ca.gov/research/aaqs/caaqs/ co/co.htm. Accessed January 8, 2004.

7 South Coast Air Quality Management District. *2003 AQMP*. World Wide Web: http://www.aqmd.gov/aqmp/AQMD03AQMP.htm. Pages 2-12. Accessed December 22, 2003.

8 California Air Resources Board. *Nitrogen Dioxide*. World Wide Web: http://www.arb.ca.gov/research/aaqs/ caaqs/no2-1/no2-1.htm. Accessed January 8, 2004.

Health Effects

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposures to NO_2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO_2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma and/or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.

In animals, exposure to levels of NO_2 considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO_2.[9]

Lead (Pb)

Lead in the atmosphere is present as a mixture of a number of lead compounds. Leaded gasoline and lead smelters have been the main sources of lead emitted into the air. Due to the phasing out of leaded gasoline, there was a dramatic reduction in atmospheric lead in the South Coast Air Basin over the past two decades.

Health Effects

Fetuses, infants, and children are more sensitive than others to the adverse effects of lead exposure. Exposure to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased lead levels are associated with increased blood pressure.

Lead poisoning can cause anemia, lethargy, seizures and death. It appears that there are no direct effects of lead on the respiratory system. Lead can be stored in the bone from early-age environmental exposure, and elevated blood lead levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of lead because of previous environmental lead exposure of their mothers.[10]

Sulfur Dioxide (SO_2)

Sulfur dioxide (SO_2) is a gaseous compound of sulfur and oxygen. SO_2 is formed when sulfur-containing fuel is burned by mobile sources, such as locomotives, ships, and off-road diesel

[9] South Coast Air Quality Management District. *2003 AQMP*. World Wide Web: http://www.aqmd.gov/aqmp/AQMD03AQMP.htm. Pages 2-18. Accessed December 22, 2003.

[10] South Coast Air Quality Management District. *2003 AQMP*. World Wide Web: http://www.aqmd.gov/aqmp/AQMD03AQMP.htm. Pages 2-21. Accessed December 22, 2003.

equipment. SO_2 is also emitted from several industrial processes, such as petroleum refining and metal processing.[11]

Health Effects

Exposure of a few minutes to low levels of SO_2 can result in airway constriction in some asthmatics. All asthmatics are sensitive to the effects of SO_2. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO_2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO_2.

Animal studies suggest that despite SO_2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO_2 levels. In these studies, efforts to separate the effects of SO_2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.[12]

Visibility Reducing Particles

Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.[13]

Health Effects

The Statewide standard is intended to limit the frequency and severity of visibility impairment due to regional haze.[14]

Sulfates (SO_4)

Sulfates (SO_4) are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to sulfur dioxide (SO_2) during the combustion process and subsequently converted to

11 California Air Resources Board. *Sulfur Dioxide*. World Wide Web: http://www.arb.ca.gov/research/aaqs/caaqs/so2-1/so2-1.htm. Accessed January 8, 2004.

12 South Coast Air Quality Management District. *2003 AQMP*. World Wide Web: http://www.aqmd.gov/aqmp/AQMD03AQMP.htm. Pages 2-19. Accessed December 22, 2003.

13 California Air Resources Board. Visibility Reducing Particles. World Wide Web: http://www.arb.ca.gov/ research/aaqs/caaqs/vrp-1/vrp-1.htm. Accessed December 22, 2003.

14 California Air Resources Board. Visibility Reducing Particles. World Wide Web: http://www.arb.ca.gov/ research/aaqs/caaqs/vrp-1/vrp-1.htm. Accessed December 22, 2003.

sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.[15]

Health Effects

Most of the health effects associated with fine particles and sulfur dioxide at ambient levels are also associated with sulfates. Thus, both mortality and morbidity effects have been observed with an increase in ambient sulfate concentrations. However, efforts to separate the effects of sulfates from the effects of other pollutants have generally not been successful.

Clinical studies of asthmatics exposed to sulfuric acid suggest that adolescent asthmatics are possibly a subgroup susceptible to acid aerosol exposure. Animal studies suggest that acidic particles such as sulfuric acid aerosol and ammonium bisulfate are more toxic than non-acidic particles like ammonium sulfate. Whether the effects are attributable to acidity or to particles remains unresolved.[16]

Hydrogen Sulfide (H_2S)

Hydrogen sulfide is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation.[17]

Health Effects

Breathing hydrogen sulfide at levels above the state standard will result in exposure to a very disagreeable odor. In 1984, an ARB committee concluded that the ambient standard for hydrogen sulfide is adequate to protect public health and to significantly reduce odor annoyance.[18]

Vinyl Chloride (VC)

Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents. [19]

15 California Air Resources Board. *Sulfates.* World Wide Web: http://www.arb.ca.gov/research/aaqs/caaqs/sulf-1/sulf-1.htm. Accessed January 8, 2004.

16 South Coast Air Quality Management District. *2003 AQMP.* World Wide Web: http://www.aqmd.gov/aqmp/AQMD03AQMP.htm. Pages 2-20. Accessed December 22, 2003.

17 California Air Resources Board. *Hydrogen Sulfide.* World Wide Web: http://www.arb.ca.gov/research/aaqs/caaqs/ h2s/h2s.htm. Accessed December 22, 2003.

18 California Air Resources Board. *Hydrogen Sulfide.* World Wide Web: http://www.arb.ca.gov/research/aaqs/caaqs/ h2s/h2s.htm. Accessed December 22, 2003.

19 California Air Resources Board. *Vinyl Chloride.* World Wide Web: http://www.arb.ca.gov/research/aaqs/caaqs /vc/vc.htm. Accessed December 22, 2003.

Health Effects

Short-term exposure to high levels of vinyl chloride in air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure to vinyl chloride through inhalation and oral exposure causes in liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer in humans.[20]

State Regulations/Standards

The State of California began to set California ambient air quality standards (CAAQS) in 1969 under the mandate of the Mulford-Carrell Act. The CAAQS are generally more stringent than the NAAQS. In addition to the six criteria pollutants covered by the NAAQS, there are CAAQS for sulfates (SO_4), hydrogen sulfide (H_2S), vinyl chloride (VC), and visibility-reducing particles. These standards are also listed in *Table 5.6-1*.

Originally, there were no attainment deadlines for the CAAQS. However, the California Clean Air Act (CCAA) of 1988 provided a time frame and planning structure to promote their attainment.

The CCAA required nonattainment areas in the State to prepare attainment plans and proposed to classify each such area on the basis of the submitted plan, as follows: moderate, if CAAQS attainment could not occur before December 31, 1994; serious, if CAAQS attainment could not occur before December 31, 1997; and severe, if CAAQS attainment could not be conclusively demonstrated at all.

The attainment plans are required to achieve a minimum 5 percent annual reduction in the emissions of nonattainment pollutants unless all feasible measures have been implemented. The South Coast Air Basin is currently classified as a nonattainment area for three criteria pollutants: ozone, PM_{10}, and $PM_{2.5}$.

Assembly Bill 32 (AB 32), the "Global Warming Solutions Act," was passed by the California State legislature on August 31, 2006. AB 32 requires the State's global warming emissions to be reduced to 1990 levels by year 2020 and by 80 percent of 1990 levels by year 2050. Pursuant to the requirements of AB 32, the State's reduction in global warming emissions will be accomplished through an enforceable statewide cap on global warming emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs the California Air Resources Board (CARB) to develop appropriate regulations and establish a mandatory reporting system to track and monitor global warming emissions levels by January 2008. CARB must prepare a plan demonstrating how the 2020 deadline can be met by January 1, 2009, or earlier. However, as immediate progress in reducing GHG can and should be made, AB 32 directed CARB and the newly created Climate Action Team (CAT) to identify a list of "discrete early action GHG reduction measures" that can be adopted and made enforceable by January 1, 2010. CAT is a consortium of representatives from State agencies who have been charged with coordinating and implementing GHG emission reduction programs that fall outside of CARB's jurisdiction.

[20] California Air Resources Board. *Vinyl Chloride*. World Wide Web: http://www.arb.ca.gov/research/aaqs/caaqs/vc/vc.htm. Accessed December 22, 2003.

To address GHG emission and global climate change in General Plans and CEQA documents, Senate Bill 97 (Chapter 185, 2007) requires the Governor's Office of Planning and Research (OPR) to develop CEQA guidelines on how to address global warming emissions and mitigate project-specific GHG. OPR is required to prepare, develop, and transmit these guidelines on or before July 1, 2009. Until such a plan has been adopted, direction for evaluation of and potential mitigation for incremental project impacts to global warming is not available.

State Air Toxics Program

Toxic air contaminants are another group of pollutants of concern in Southern California. There are hundreds of different types of toxic air contaminants, with varying degrees of toxicity. Sources of toxic air contaminants include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle engine exhaust. Public exposure to toxic air contaminants can result from emissions from normal operations, as well as accidental releases of hazardous materials during upset spill conditions. Health effects of toxic air contaminants include cancer, birth defects, neurological damage, and death.

California regulates toxic air contaminants through its air toxics program, mandated in Chapter 3.5 (Toxic Air Contaminants) of the Health and Safety Code (Health and Safety Code Section 39660 et seq.) and Part 6 (Air Toxics "Hot Spots" Information and Assessment) (Health and Safety Code Section 44300 et seq.). The California Air Resources Board, working in conjunction with the State Office of Environmental Health Hazard Assessment, identifies toxic air contaminants. Air toxic control measures may then be adopted to reduce ambient concentrations of the identified toxic air contaminant to below a specific threshold, based on its effects on health, or to the lowest concentration achievable through use of best available control technology (BACT) for toxics. The program is administered by the California Air Resources Board. Air quality control agencies, including the South Coast Air Quality Management District, must incorporate air toxic control measures into their regulatory programs or adopt equally stringent control measures as rules within six months of adoption by the California Air Resources Board.

Regional Plans

Southern California Association of Governments (SCAG)

The Southern California Association of Governments is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino and Imperial Counties and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. The Southern California Association of Governments serves as the Federally designated metropolitan planning organization for the Southern California region and is the largest metropolitan planning organization in the United States. With respect to air quality planning, the Southern California Association of Governments has prepared the Regional Comprehensive Plan and Guide for the region, which includes Growth Management and Regional Mobility chapters that form the basis for the land use and transportation control portions of the *2007 Air Quality Management Plan*. The Southern California Association of Governments is responsible under the Federal Clean Air Act for determining conformity of projects, plans, and programs with the South Coast Air Quality Management District.

SCAG Regional Comprehensive Plan and Guide

As the designated Metropolitan Planning Organization, the Federal government mandates SCAG to research and draw up plans for transportation, growth management, hazardous waste management, and air quality. These mandates led SCAG to prepare comprehensive regional plans to address these concerns.

SCAG is responsible for the maintenance of a continuous, comprehensive, and coordinated planning process resulting in a Regional Transportation Plan and a Regional Transportation Improvement Program. SCAG is responsible for the development of demographic projections, and is also responsible for development of the integrated land use, housing, employment, transportation programs, measures, and strategies for portions of the South Coast Air Quality Management Plan (AQMP).

Regional Transportation Plan (2004 RTP)

The 2004 RTP represents an assessment of the overall growth and economic trends in the SCAG Region for the years 2004 through 2025 and provides strategic direction for investments during this time period. The Plan is intended to serve as a catalyst for linking the various transportation agency investments within the SCAG Region to provide a cohesive, balanced, and multimodal transportation system that addresses regional goals and is consistent with Federal and State requirements.

South Coast Air Quality Management District

The South Coast Air Quality Management District is one of 35 air quality management districts that have prepared Air Quality Management Plans to accomplish a five-percent annual reduction in emissions. The *2007 Air Quality Management Plan for the South Coast Air Basin* (*2007 Air Quality Management Plan*) relies on a multi-level partnership of governmental agencies at the Federal, State, regional, and local level. The *2007 Air Quality Management Plan* proposes policies and measures to achieve Federal and State standards for improved air quality in the South Coast Air Basin and those portions of the Salton Sea Air Basin (formerly named the Southeast Desert Air Basin) that are under the South Coast Air Quality Management District jurisdiction.

The *2007 Air Quality Management Plan* also addresses several State and Federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The *2007 Air Quality Management Plan* is consistent with and builds upon the approaches taken in the *2003 Air Quality Management Plan*, the *1997 Air Quality Management Plan*, and the 1999 Amendments to the Ozone State Implementation Plan for the South Coast Air Basin for the attainment of the Federal ozone air quality standard.

The *2007 Air Quality Management Plan* incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes and new air quality modeling tools. The *2007 Air Quality Management Plan* includes new information on key elements such as:

- Current air quality;
- Improved emission inventories, particularly significant increases in mobile source emissions;
- An overall control strategy comprised of South Coast Air Quality Management District, State, Federal Stationary and Mobile Source Control Measures, and the Southern California Association of Governments Regional Transportation Strategy and Control Measures;
- New attainment demonstration for $PM_{2.5}$ and O_3;
- Milestones to the Federal Reasonable Further Progress Plan; and
- Preliminary motor vehicle emission budgets for transportation conformity purposes.

In addition to the *2007 Air Quality Management Plan* and its rules and regulations, the South Coast Air Quality Management District published the *CEQA Air Quality Handbook*.[21] The *CEQA Air Quality Handbook* provides guidance to assist local government agencies and consultants in developing the environmental documents required by CEQA. With the help of the *CEQA Air Quality Handbook*, local land use planners and other consultants are able to analyze and document how proposed and existing projects affect air quality and should be able to fulfill the requirements of the CEQA review process. The South Coast Air Quality Management District is in the process of developing an *Air Quality Analysis Guidance Handbook* to replace the current *CEQA Air Quality Handbook*.

Rule 403

Rule 403 was last amended by the South Coast Air Quality Management District on June 3, 2005. The purpose of this Rule is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. The provisions of this Rule apply to any activity or man-made condition capable of generating fugitive dust.

South Coast Air Basin Attainment

Data collected at permanent monitoring stations are used by the EPA to classify regions as "attainment" or "nonattainment," depending on whether the regions met the requirements stated in the primary NAAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA.

The proposed 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). *Table 5.6-3, South Coast Air Basin Attainment Status*, lists the air quality attainment status for the SCAB. The EPA has designated the Southern California Association of Governments (SCAG) as the Metropolitan Planning Organization (MPO) responsible for ensuring compliance with the requirements of the CAA.

The EPA established new national air quality standards for ground-level O_3 and $PM_{2.5}$ in 1997. On May 14, 1999, the Court of Appeals for the District of Columbia Circuit issued a decision ruling that the Federal CAA, as applied in setting the new public health standards for O_3 and fine particulate matter, was unconstitutional as an improper delegation of legislative authority to the EPA. On

[21] Approved by the South Coast Air Quality Management District Governing Board in 1993.

February 27, 2001, the U.S. Supreme Court upheld the way the government sets air quality standards under the CAA. The Court unanimously rejected industry arguments that the EPA must consider financial cost as well as health benefits in writing standards. The justices also rejected arguments that the EPA took too much lawmaking power from Congress when it set tougher standards for O_3 and soot in 1997. Nevertheless, the Court invalidated the EPA's policy for implementing new O_3 rules, saying that the agency ignored a section of the law that restricts its authority to enforce such rules. In April 2003, the EPA was cleared by the White House Office of Management and Budget (OMB) to implement the 8-hour ground-level O_3 standard. The EPA issued the proposed rule implementing the 8-hour O_3 standard in April 2003. The EPA completed the final 8-hour nonattainment status on April 15, 2004. The EPA revoked the 1-hour O_3 standard on June 15, 2005.

The EPA issued the final $PM_{2.5}$ implementation rule in fall 2004. The EPA issued final designations on December 14, 2004. The EPA lowered the 24-hour $PM_{2.5}$ standard from 65 to 35 micrograms per cubic meter ($\mu g/m^3$) and revoked the annual PM_{10} standard on December 17, 2006.

Table 5.6-3
South Coast Air Basin Attainment Status

Pollutant	State	Federal
One-Hour O_3	Nonattainment	Revoked June 2005
Eight-Hour O_3	Not Established	Severe 17 Nonattainment (attainment date 2021)
$PM_{2.5}$	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Serious Nonattainment
CO	Attainment	Serious Maintenance
NO_2	Attainment	Attainment/Maintenance
All Others	Attainment/Unclassified	Attainment/Unclassified

Source: CARB and SCAQMD, April 2008.

Currently there are no adopted regulations to combat global climate change on a national level. However, recent statutory authority has been granted to the EPA that may change the voluntary approach taken under the current administration to address this issue. On April 2, 2007, the United States Supreme Court ruled that the EPA has the authority to regulate CO_2 emissions under the federal Clean Air Act. Consequently, the regulation of greenhouse gas (GHG) emissions on a national level by the EPA is forthcoming.

Regional Air Quality Planning Framework

The 1976 Lewis Air Quality Management Act established the SCAQMD and other air districts throughout the State. The CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the Federal standards in nonattainment areas of the state.

The California Air Resources Board (CARB) coordinates and oversees both State and Federal air pollution control programs in California. The CARB oversees activities of local air quality management agencies and is responsible for incorporating air quality management plans for local air basins into a SIP for EPA approval. The CARB maintains air quality monitoring stations

throughout the State in conjunction with local air districts. Data collected at these stations are used by the CARB to classify air basins as "attainment" or "nonattainment" with respect to each pollutant and to monitor progress in attaining air quality standards. The CARB has divided the State into 15 air basins. Significant authority for air quality control within the basins has been given to local air districts that regulate stationary source emissions and develop local nonattainment plans. The CCAA provides the SCAQMD with the authority to manage transportation activities at indirect sources and regulate stationary source emissions. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. An example of this would be the motor vehicles at an intersection, at a mall, and on highways. As a State agency, the CARB regulates motor vehicles and fuels for their emissions.

Regional Air Quality Management Plan

The SCAQMD and SCAG are responsible for formulating and implementing the Air Quality Management Plan (AQMP) for the Basin. Regional AQMPs were adopted for the Basin for 1979, 1982, 1989, 1991, 1994, 1997, and 2003.

The SCAQMD Governing Board approved the 1997 AQMP on November 15, 1996. After approval, the AQMP was submitted to the ARB for its review and approval. The ARB approved the O_3 and PM_{10} portions of the 1997 AQMP on January 23, 1997, and submitted the plan to the EPA as proposed revisions to the SIP. The EPA rejected the District's revision of its 1997 AQMP in January 1999. The rejection, however, covered only the provisions of the AQMP designed to attain the federal O_3 standard. As a result of the rejection, the SCAQMD prepared a draft "Proposed 1999 Amendment to the 1997 Ozone SIP Revision for the South Coast Air Basin" on October 7, 1999, for public review and comment. The 1999 Amendment proposed to revise the O_3 portion of the 1997 AQMP that was submitted to the EPA as a revision to the South Coast Air Basin portion of the 1994 California O_3 SIP. The SCAQMD Governing Board adopted the "1999 Amendment to the 1997 Ozone SIP Revision for the South Coast Air Basin" on December 10, 1999. In addition, the SCAQMD Governing Board settled with three environmental organizations on their litigation of the 1994 O_3 SIP.

The SCAQMD adopted a comprehensive plan update, the 2003 AQMP, for the Basin on August 1, 2003. The 2003 AQMP sought to demonstrate attainment with State and federal air quality standards and incorporated a revised emissions inventory, the latest modeling techniques, and updated control measures remaining from the 1997/1999 SIP and new control measures. The SCAQMD submitted the 2003 AQMP to the ARB and EPA for their review and approval in early August 2003. The CARB approved the 2003 AQMP in October 2003 and submitted its recommended modifications to the EPA for approval.

The SCAQMD adopted the 2007 AQMP on June 1, 2007, which it describes as a regional and multiagency effort (the SCAQMD Governing Board, CARB, SCAG, and EPA). State and federal planning requirements will include developing control strategies, attainment demonstration, reasonable further progress, and maintenance plans. The 2007 AQMP also incorporates significant new scientific data, primarily in the form of updated emission inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The CARB has adopted the SCAQMD 2007 AQMP as part of the 2007 SIP. The SCAQMD is awaiting EPA's review and approval of its 2007 AQMP.

EXISTING AIR QUALITY CONDITIONS

Regional Air Quality

As previously discussed, the project site is located within the SCAB, which includes Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. Air quality regulation in the SCAB is administered by the SCAQMD, which is the regional agency created for the air basin.

The SCAB climate is determined by its terrain and geographical location. The SCAB is a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern boundary, and high mountains surround the rest of the SCAB. The region lies in the semi--permanent high pressure zone of the eastern Pacific. The resulting climate is mild and tempered by cool ocean breezes. This climatological pattern is rarely interrupted. However, periods of extremely hot weather, winter storms, and Santa Ana wind conditions do occur.

The annual average temperature varies little throughout the SCAB, ranging from the low to middle 60s, measured in degrees Fahrenheit. With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than that of inland areas. The climatological station closest to the site is the San Fernando Station.[22] Although this station was closed after 1974, the monitored temperatures are still considered representative for the project area. The annual average maximum temperature recorded between 1927 and 1974 at this station was 78.2 degrees (Fahrenheit), and the annual average minimum was 49.3 degrees. January is typically the coldest month in this area of the SCAB.

The majority of annual rainfall in the SCAB occurs between November and April. Summer rainfall is minimal and generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the SCAB along the coastal side of the mountains. Average rainfall measured at the San Fernando Station varied from 3.53 inches in January to 0.41 inch or less between May and October, with an average annual total of 16.16 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

The SCAB experiences a persistent temperature inversion (increasing temperature with increasing altitude) as a result of the semi-permanent high pressure cell over the Pacific Ocean (the Pacific high). This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed in mid- to late afternoon on hot summer days, when the smog appears to clear up suddenly. Winter inversions frequently break by mid-morning.

Winds in the vicinity of the project area blow predominantly from the east-southeast, with relatively low velocities. Wind speeds in the project area average about four miles per hour (mph). Summer wind speeds average slightly higher than winter wind speeds. Low average wind speeds, together with a persistent temperature inversion, limit the vertical dispersion of air pollutants throughout the SCAB. Strong, dry, north or northeasterly winds, known as Santa Ana winds, occur during the fall

[22] Western Regional Climatic Center, at Web site http://www.wrcc.dri.edu, 2008.

and winter months, dispersing air contaminants. The Santa Ana conditions tend to last for several days at a time.

The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are the lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly inland into Riverside and San Bernardino Counties. In the winter, the greatest pollution problems are carbon monoxide (CO) and oxides of nitrogen (NO_X) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_X to form photochemical smog.

Local Air Quality

As previously indicated, the project site is located within the SCAQMD's jurisdiction. The SCAQMD maintains ambient air quality monitoring stations throughout the SCAB. The air quality monitoring station closest to the site with more complete air quality data is the Santa Clarita Station. The criteria pollutants monitored at this station are shown in *Table 5.6-4, Ambient Air Quality at Santa Clarita Air Monitoring Station (1-Hour and 24-Hour Concentrations)*, and *Table 5.6-5, Ambient Air Quality at Santa Clarita Air Monitoring Station (8-Hour and 24-Hour Concentrations)*. CO and NO_2 levels monitored at this station have not exceeded State and Federal standards in the past three years. Ozone concentrations monitored at this station exceeded the State one-hour O_3 standard from 62 to 69 days per year in the past three years. The Federal eight-hour O_3 standard was exceeded from 40 to 52 days per year. Particulate matter less than 10 microns in diameter (PM_{10}) monitored at this station exceeded the State 24-hour standard one day per year, but did not exceed the Federal standard in the past three years. The Burbank-West Palm Avenue Station, located approximately 20 miles southeast of the project site, is the closest station that monitors $PM_{2.5}$ and SO_2. Data for $PM_{2.5}$ and SO_2 taken from the Burbank-West Palm Avenue Station are included in *Tables 5.6-4* and *5.6-5*. The Federal $PM_{2.5}$ standard was not exceeded in the past three years. There is no State $PM_{2.5}$ standard. The Federal and State standards for SO_2 were not exceeded in the past ten years.

Table 5.6-4
Ambient Air Quality at Santa Clarita Air Monitoring Station
(1-Hour and 24-Hour Concentrations)

	One-Hour Carbon Monoxide		One-Hour Ozone		Coarse Suspended Particulate (PM_{10})		Nitrogen Dioxide	
	Max. 1-Hour Conc. (ppm)[1]	Number of Days Exceeded	Max. 1-Hour Conc. (ppm)	Number of Days Exceeded	Max. 24-Hour Conc. ($\mu g/m^3$)	Number of Days Exceeded	Max. Conc. (ppm)	Number of Days Exceeded
State Stds.	> 20 ppm/1 hr		> 0.09 ppm/1 hr		> 50 $\mu g/m^3$, 24 hrs		> 0.18 ppm/1 hr	
2006	2.0	0	0.16	62	53	1	0.08	0
2005	2.2	0	0.17	65	55	1	0.09	0
2004	5.2	0	0.16	69	54	1	0.09	0
MAXIMUM	**5.2**		**0.17**		**55**		**0.09**	

Table 5.6-4 (Continued)
Ambient Air Quality at Santa Clarita Air Monitoring Station
(1-Hour and 24-Hour Concentrations)

	One-Hour Carbon Monoxide		One-Hour Ozone		Coarse Suspended Particulate (PM_{10})		Nitrogen Dioxide	
	Max. 1-Hour Conc. (ppm)[1]	Number of Days Exceeded	Max. 1-Hour Conc. (ppm)	Number of Days Exceeded	Max. 24-Hour Conc. ($\mu g/m^3$)	Number of Days Exceeded	Max. Conc. (ppm)	Number of Days Exceeded
Federal Stds.	> 35 ppm/1 hr		No Federal Standard		> 150 $\mu g/m^3$, 24 hrs		0.053 ppm, annual average	
2006	2.0	0	0.16	NA[2]	53	0	0.018	0
2005	2.2	0	0.17	NA	55	0	0.019	0
2004	5.2	0	0.16	NA	54	0	0.020	0
MAXIMUM	**5.2**		**0.17**		**55**		**0.020**	

Source: CARB and EPA 2004–2006.
1 Data taken from the EPA Web site; others taken from California Air Resources Board (CARB) Web site.
2 Not applicable. Federal 1-hour ozone standard was revoked in 2005.

Table 5.6-5
Ambient Air Quality at Santa Clarita Air Monitoring Station
(8-Hour and 24-Hour Concentrations)

	Eight-Hour Carbon Monoxide		Eight-Hour Ozone		Fine Suspended Particulate ($PM_{2.5}$)[1]		Sulfur Dioxide[1]	
	Max. 8-Hour Conc. (ppm)	Number of Days Exceeded	Max. 8-Hour Conc. (ppm)	Number of Days Exceeded	Max. 24-Hour Conc. ($\mu g/m$)	Number of Days Exceeded	Max. 24-Hour Conc. (ppm)	Number of Days Exceeded
State Stds.	≥ 9.0 ppm/8 hrs		> 0.07 ppm/8 hrs		No State Standard		> 0.04 ppm/24 hrs	
2006	1.3	0	0.12	NA[2]	51	NA	0.004	0
2005	1.3	0	0.14	NA	63	NA	0.006	0
2004	3.7	0	0.13	NA	60	NA	0.009	0
MAXIMUM	**3.7**		**0.14**		**63**		**0.009**	
Federal Stds.	≥ 9.0 ppm/8 hrs		> 0.075 ppm/8 hrs		> 35 $\mu g/m^3$, 24 hrs		0.14 ppm/24 hrs	
2006	1.3	0	0.12	40	51	ND[3]	0.001	0
2005	1.3	0	0.14	47	63	ND	0.002	0
2004	3.7	0	0.13	52	60	ND	0.003	0
MAXIMUM	**3.7**		**0.14**		**63**		**0.003**	

Source: CARB 2004–2006.
1 Data taken from Burbank-W Palm Avenue Station, the closest station that monitors $PM_{2.5}$ and sulfur dioxide data.
2 No State standard.
3 No data available.

5.6.2 SIGNIFICANCE THRESHOLD CRITERIA

SCAQMD SIGNIFICANCE THRESHOLDS

As previously indicated, specific criteria for determining whether the potential air quality impacts of a project are significant are set forth in the SCAQMD's *CEQA Air Quality Handbook*. The criteria include emissions thresholds, compliance with State and national air quality standards, and consistency with the current AQMP.

Table 5.6-6, *SCAQMD Significance Thresholds*, depicts the significance thresholds for construction and operational emissions that are established by the SCAQMD

Table 5.6-6
SCAQMD Significance Thresholds

Air Pollutant	Construction Threshold (pounds per day)	Operational Threshold (pounds per day)
ROC	75	55
CO	550	550
NO_X	100	55
SO_X	150	150
PM_{10}	150	150
$PM_{2.5}$	55	55
Source: SCAQMD, 2008.		

Projects in the SCAB with construction- or operation-related emissions that exceed any of the emission thresholds above are considered significant per *CEQA*.

SCAQMD LOCALIZED SIGNIFICANCE THRESHOLDS

For this project, the appropriate Source Receptor Area (SRA) is Santa Clarita Valley (Area 13). The South Coast Air Quality Management District's *Final Localized Significance Threshold (LST) Methodology* guidance document provides mass rate look-up tables in Appendix C, which allows a user to determine if the daily emissions for proposed construction could result in significant localized air quality impacts.

LST analysis for construction is applicable to all projects of 5 acres and less. If emissions exceed the LST for a 5-acre site, then dispersion modeling needs to be conducted. For projects larger than 5 acres, localized significance for construction can be determined by performing dispersion modeling for emissions that exceed the localized air quality standards. Unless construction occurs on less than 5 acres per day, performing a dispersion model is not necessary. Even though the entire project is 30 acres, this analysis assumes less than 5 acres per day would be constructed.

There are existing residential uses to the west at a distance of approximately 75 feet (22.5 meters) from the closest construction area. Given the proximity to potential on-site construction areas, the localized significance threshold values for 25 meters were used. The localized significance threshold mass rate look-up tables in Appendix C of the *Final Localized Significance Threshold Methodology* are

applicable to the following pollutants only: NO_X, CO, PM_{10}, and $PM_{2.5}$. Localized significance thresholds are derived based on the location of the activity (i.e., the source/receptor area); the emission rates of NO_X, CO, PM_{10}, and $PM_{2.5}$; and the distance to the nearest exposed individual. Based on SCAQMD LST guidelines, receptors closer than 25 meters should use the thresholds for 25 meters to determine the potential LST impacts. *Table 5.6-7, Localized Significance Thresholds at 25 Meters*, lists the LST thresholds for 25 meters that were used.

Table 5.6-7
Localized Significance Thresholds at 25 Meters

Air Pollutant	Construction Threshold (pounds per day)	Operational Threshold (pounds per day)
CO	1,046	1,046
NO_X	319	319
PM_{10}	12	3
$PM_{2.5}$	6	2
Source: SCAQMD, 2008.		

STANDARDS FOR POLLUTANTS WITH LOCALIZED "HOT SPOT" EFFECTS

Air pollutant standards for CO are as follows:

- California State one-hour CO standard of 20.0 ppm; and
- California State eight-hour CO standard of 9.0 ppm.

The significance of localized project impacts depends on whether ambient CO levels in the vicinity of the project are above or below State and Federal CO standards. When ambient levels are below the standards without the project emissions, a project is considered to have significant impacts if project-related emissions result in an exceedance of one or more of these standards. According to Section 9.4 of the SCAQMD *CEQA Air Quality Handbook*, if ambient levels already exceed a State or Federal standard, project emissions are considered significant if they increase one-hour CO concentrations by 1.0 ppm or more or eight-hour CO concentrations by 0.45 ppm or more.

GLOBAL CLIMATE CHANGE

The SCAQMD has convened a GHG CEQA Significance Threshold Working Group. Currently the SCAQMD is in the process of establishing a threshold for GHG emissions to determine a project's regional contribution to global climate change impacts.[23] To address GHG emission and global climate change in General Plans and CEQA documents, Senate Bill 97 (Chapter 185, 2007) requires the Governor's Office of Planning and Research (OPR) to develop CEQA guidelines on how to address global warming emissions and mitigate project-specific GHG. OPR is required to prepare, develop, and transmit these guidelines on or before July 1, 2009. Until such a plan has been adopted, the OPR has provided a Technical Advisory regarding CEQA and Climate Change.[24] This

[23] http://www.aqmd.gov/ceqa/handbook/GHG/GHG.html
[24] Governor's Office of Planning and Research. 2008. *Technical Advisory, CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review.* June 19, 2008. Sacramento, CA.

technical advisory recommends that lead agencies identify and quantify the GHG emissions, assess the significance of the impact on climate change, and if the impact is found to be significant, identify alternatives and/or mitigation measures that will reduce the impact below significance. A significant impact relative to Global Climate Change would be considered by the City of Santa Clarita to occur based upon:

- The extent to which the project would help or hinder attainment of the state's goal of reducing Greenhouse Gas emissions.
- The extent to which the project would facilitate or be consistent with, applicable state, regional, or local plans adopted for the purposes of reducing Greenhouse Gas emissions.
- The extent to which the project would consume fuels or other energy resources that contribute to Global Climate Change, in an amount in excess of Business As Usual.

METHODOLOGY FOR IMPACT EVALUATION

A number of modeling tools are available to assess air quality impacts of projects. In addition, certain air districts, such as the SCAQMD, have created guidelines and requirements to conduct air quality analyses. The SCAQMD's current guidelines, *CEQA Air Quality Handbook*), were adhered to in the assessment of air quality impacts for the proposed project.

The air quality assessment includes estimating emissions associated with short-term construction and long-term operation of the proposed project. Criteria pollutants with regional impacts would be emitted by project-related vehicular trips. In addition, localized air quality impacts, or a slight increase in CO concentrations (CO hot spots) near intersections or roadway segments in the project vicinity, would result from project-related vehicle trips.

CO concentrations were evaluated for existing conditions, interim year conditions without and with the project, and cumulative conditions without and with the project, based on traffic data provided in the traffic study for this project. CALINE4, the fourth generation California Line Source Dispersion Model developed by the California Department of Transportation (Caltrans), was used to calculate the CO concentrations. Input data for this model include meteorology, street network geometrics, traffic information, and emission generation rates. Meteorological data required include temperature, sigma theta (standard deviation of wind direction change), wind direction, and wind speed. Street network geometrics require use of an "x, y" coordinate system onto which the modeled roadway can be overlaid in order to identify the relative locations of the traffic lane(s) and nearby receptor(s). Required traffic information included peak-hour traffic volumes, speed limit, level of service (LOS), and signal cycle times. Emission factors were calculated using the CARB EMFAC 2007 emission factors.

Output from the model includes one-hour CO concentrations in parts per million (ppm) at selected receptor locations. To reflect total concentrations, the ambient CO concentration of the vicinity must be added to the CO concentration predicted by CALINE4. Based on the methodology suggested by the EPA and included in Caltrans CO Protocol, the existing ambient concentration was determined as the higher of the second highest annual one-hour and annual eight-hour observation at the nearest representative monitoring station over the past two years. Ambient concentrations for 2007 and cumulative year scenarios are assumed to be the same as the existing levels, which were

determined to be the higher of the second highest CO concentrations monitored in the past two years at the nearest monitoring station, for the worst-case scenario. The predicted CALINE4 concentration is calculated for the one-hour averaging time. The one-hour CO concentrations predicted by CALINE4 were multiplied by a persistence factor of 0.7 to determine the predicted eight-hour CO concentrations.

Regional emissions were calculated from motor vehicles. Predictions for air pollutant emissions generated by the project traffic were calculated with the URBEMIS 2007 model, based on the trip generations projected for the project in the *Traffic Impact Analysis* report. Emissions from stationary sources, such as natural gas usage, were also calculated with URBEMIS 2007.

The SCAQMD has developed localized significance threshold (LST) methodology that can be used to determine whether or not a project may generate significant adverse localized air quality impacts. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or State AAQS and are developed based on the ambient concentrations of that pollutant for each source receptor area. SCAQMD's current guidelines, *Final Localized Significance Threshold Methodology* (June 2003), were adhered to in the assessment of air quality impacts for the proposed project.

The LST mass rate look-up tables are used to determine whether the daily emissions for the proposed construction and operational activities could result in significant localized air quality impacts. The emissions of concern from construction activities are NO_X and CO combustion emissions from construction equipment and fugitive PM_{10} and $PM_{2.5}$ dust from construction site preparation activities. The primary emissions from operational activities include but are not limited to NO_X and CO combustion emissions from stationary sources and/or on-site mobile equipment. Off-site mobile emissions from the project are not included in the emissions compared to the LSTs.

Global warming and GHGs are an emerging environmental concern being raised on statewide, national, and global levels. Regional, State, and federal agencies are developing strategies to control pollutant emissions that contribute to global warming. However, neither CEQA nor the CEQA Guidelines mention or provide any methodology for analysis of GHGs, including CO_2, nor do they provide any significance thresholds. This air quality analysis follows all procedures and requirements of the OPR, State CEQA and the SCAQMD CEQA Handbook. Evaluation of any potential global warming effects resulting from the project and the effect on the greenhouse effect or global warming is speculative until such time as significance criteria have been established.

5.6.3 IMPACTS AND MITIGATION MEASURES

CONSTRUCTION IMPACTS

Level of Significance Prior to Mitigation: Potentially Significant Impact.

Impact Analysis: Construction activities produce combustion emissions from various sources such as utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, asphalt paving, and motor vehicles transporting the construction crew. Exhaust emissions from construction activities envisioned on-site would vary daily as construction activity levels change. The use of construction equipment on-site would result in localized exhaust emissions.

Construction activities associated with the proposed project occurring on the project site would temporarily increase localized PM_{10}, $PM_{2.5}$, ROC, NO_X, and CO concentrations in the project vicinity. The primary sources of construction-related ROC and NO_X emissions are gasoline- and diesel-powered, heavy-duty mobile construction equipment such as scrapers and motor graders. Primary sources of PM_{10} emissions would be clearing activities, excavation and grading operations, construction vehicle traffic on unpaved ground, and wind blowing over exposed earth surfaces.

Emissions generated from construction activities are anticipated to cause temporary increases in pollutant concentrations that could contribute to continuing violations of the Federal and State maximum concentration standards. The frequency and concentrations of such violations would depend on several factors, including the soil composition on the site, the amount of soil disturbed, wind speed, the number and type of machinery used, the construction schedule, and the proximity of other construction and demolition projects.

Construction

Construction activities would include demolition, grading, trenching, hauling, paving, building, and architectural coating. The 8,000-square-foot Foundation and Administration Offices Building would be demolished. Construction of a 125,363 square foot Inpatient Building, 10,000 square foot Central Plant building, and 200,000 square feet of Medical Office Buildings would occur. In addition, the proposed project would include the export of up to 93,293 cubic yards of dirt associated with subsurface excavation for the Inpatient Building and Parking Structures 1, 2, 3, and 4, the quantities for each building are noted below:

- Inpatient Building – 13,100 cubic yards;
- PS1 – 17,700 cubic yards;
- PS2 – 11,493 cubic yards;
- PS3 – 9,000 cubic yards; and
- PS4 – 42,000 cubic yards.

Hauling materials would be transported off-site using City-designated haul routes to the Chiquita Canyon Landfill. For purposes of this analysis it is assumed that the haul distance would be 20 miles round trip. In addition, the analysis for hauling has assumed 20 cubic yard trucks, which would average 75 trips per day based upon the construction phase described below.

Fugitive dust emissions are generally associated with grading, land clearing, exposure, vehicle and equipment travel on unpaved roads, and dirt/debris pushing. Dust generated during construction activities would vary substantially depending on the level of activity, the specific operations, and weather conditions. Sensitive receptors in the project vicinity and on-site construction workers may be exposed to blowing dust, depending upon prevailing wind conditions.

Regional rules (i.e., Rule 403) exist that would help reduce fugitive dust emissions during construction periods, which would reduce short-term air quality impacts. Fugitive dust from a construction site must be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission

source. Dust suppression techniques would be implemented to prevent fugitive dust from creating a nuisance off-site. Implementation of these dust suppression techniques can reduce the fugitive dust generation (and thus the PM_{10} component) by 50 percent or more. Compliance with these rules would reduce impacts on nearby sensitive receptors.

Table 5.6-8, *Peak-Day Construction Emissions by Phase*, depicts the pollutant emission during construction. The table breaks down the construction emissions by construction phase.

Table 5.6-8
Peak-Day Construction Emissions by Phase

Construction Phase	Pollutant Emissions (pounds/day)					
	CO	ROC	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Demolition	6.9	1.5	11	0.0035	2.5	1.1
Mass Grading	36	7.4	82	0.060	79	19
Fine Grading	15	3.4	28	0.0013	77	17
Trenching	0	0.040	0.074	0	0	0
Paving	15	4.8	25	0.0083	2.0	1.8
Building	41	5.3	24	0.034	1.7	1.5
Coating	0.86	66	0.052	0.0010	0.0071	0.0038
SCAQMD Threshold	**550**	**75**	**100**	**150**	**150**	**55**
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Localized Significance Threshold	**1,046**	**--**	**319**	**--**	**12**	**6**
Exceed Significance?	**No**	**--**	**No**	**--**	**Yes**	**Yes**

Source: LSA, *Air Quality Impact Analysis Henry Mayo Newhall Memorial Hospital Master Plan City of Santa Clarita*, June 2008; refer to Appendix F1.

Construction would occur over a 15-year period. Each construction phase would occur separately and not overlap. Thus, during the peak day of construction, for each construction phase, the SCAQMD threshold would not be exceeded for each pollutant emission (CO, ROC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$). During the construction, the maximum amount of CO emitted would be 41 pounds per day during the building phase; the maximum amount of ROC emitted would be 66 pounds per day during the architectural coating phase; the maximum amount of NO_X emitted would be 82 pounds per day during the mass grading phase; the maximum amount of SO_X emitted would be 0.06 pounds per day during the mass grading phase; the maximum amount of PM_{10} emitted would be 79 pounds per day during the mass grading phase; and the maximum amount of $PM_{2.5}$ emitted would be 19 pounds per day during the mass grading phase. Each pollutant emitted at the maximum amount is below the SCAQMD thresholds; thus a less than significant impact would occur.

SCAQMD Localized Significance Threshold Analysis

Table 5.6-8 also compares the construction-related emissions of CO, NO_X, PM_{10}, and $PM_{2.5}$ to the LSTs for the Santa Clarita Valley at distances of 25 meters. The emissions rates for the proposed construction activities are less than significant for CO and NO_X, however PM_{10}, and $PM_{2.5}$ exceed their thresholds during the grading phases. Therefore, even with all feasible mitigation measures implemented, the construction of the proposed project would result in significant short-term

localized air quality impacts potentially resulting in short-term exceedances of the PM_{10} and $PM_{2.5}$ AAQS at nearby residences. Thus, a significant and unavoidable impact would occur.

Summary of Construction Emissions

With the implementation of feasible mitigation measures during construction of the proposed project, emissions from construction equipment exhaust and soil disturbance would be minimized. However, construction emissions from the project's construction activities would exceed the localized significance thresholds established by the SCAQMD for PM_{10} and $PM_{2.5}$. Construction of the proposed project would result in significant unavoidable air quality impacts.

Mitigation Measures: Although construction-related air quality impacts cannot be reduced to less than significant, the following standard air pollution control mitigation measures would serve to reduce impacts to the maximum extent feasible.

AQ1 During construction, project applicant shall require the contractor to be responsible for ensuring that all measures listed in *Table 5.6-9*, *Standard Measures for Construction-Related Emissions*, are implemented. To achieve the particulate control efficiencies shown, finished surfaces are to be stabilized with water and/or dust palliatives and isolated from traffic flows to prevent emissions of fugitive dust from these areas. In addition, the following water application rates are required:

- Roads traveled by autos, rock trucks, water trucks, fuel trucks, and maintenance trucks: up to twice per hour;
- Roads traveled by scrapers and loaders in active excavation areas: up to three times per hour;
- Finish grading areas: up to once every two hours.

AQ2 The project applicant shall require the construction contractor to ensure that all construction equipment shall be maintained in good operating condition so as to reduce operational emissions. The contractor shall ensure that all construction equipment is properly serviced and maintained.

AQ3 The project applicant shall require the construction contractor to utilize, as much as possible, precoated/natural colored building materials, water-based or low-VOC coating, and coating transfer or spray equipment with high transfer efficiency, such as HVLP spray method, or manual coatings application such as a paintbrush, hand roller, trowel, spatula, dauber, rag, or sponge.

AQ4 All trucks that are to haul excavated or graded material on-site shall comply with *State Vehicle Code* Section 23114 (Spilling Loads on Highways), with special attention to Sections 23114(b)(2)(F), (e)(4) as amended, regarding the prevention of such material spilling onto public streets and roads. Prior to the issuance of grading permits, the project applicant shall demonstrate to the City of Santa Clarita how the project operations subject to that specification during hauling activities shall comply with the provisions set forth in Sections 23114(b)(2)(F), (e)(4).

Level of Significance After Mitigation: Significant Unavoidable Impact.

Table 5.6-9
Standard Measures for Construction-Related Emissions

Construction Vehicle/Equipment Operation
• Configure construction parking to minimize traffic interference.
• Provide temporary traffic control during all phases of construction activities to improve traffic flow (e.g., flag person).
• Provide on-site food service for construction workers.
• Prohibit truck idling in excess of 10 minutes.
• Apply four to six degree injection timing retard to diesel IC engines, whenever feasible.
• Use reformulated low-sulfur diesel fuel in all equipment, whenever feasible.
• Use catalytic converters on all gasoline-powered equipment.
• Minimize concurrent use of equipment through equipment phasing.
• Use low NO_X engines, alternative fuels, and electrification, whenever feasible.
• Substitute electric and gasoline-powered equipment for diesel-powered equipment, whenever feasible.
• Turn off engines when not in use.
• Wash truck wheels before the trucks leave the construction site.
• When operating on-site, do not leave trucks idling for periods in excess of 10 minutes.
• Operate clean fuel van(s), preferably vans that run on compressed natural gas or propane, to transport construction workers to and from the construction site.
• Provide documentation to the City prior to beginning construction, demonstrating that the project proponents will comply with all SCAQMD regulations including 402, 403, 1113, and 1403.
• Suspend use of all construction equipment operations during second stage smog alerts.
Grading
• Apply nontoxic soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).
• Enclose, cover, water twice daily, or apply nontoxic soil binders, according to manufacturers' specifications, to exposed piles (i.e., gravel, sand, dirt) with 5 percent or greater silt content.
• Water active sites at least twice daily.
• Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 mph.
• Cover all trucks hauling dirt, sand, soil, or other loose materials on-site or maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer) in accordance with the requirements of CDC Section 23114.
• Cover all trucks hauling these materials off site.
Paved Roads
• Sweep streets at the end of the day if visible soil material is carried onto adjacent public paved road (water sweepers with reclaimed water are recommended).
• Sweep public streets at the conclusion of construction work.
• Install adequate storm water control systems to prevent mud deposition onto paved areas.
Unpaved Roads
• Apply water three times daily, or non-toxic soil stabilizers according to manufacturers' specifications, to all unpaved parking or staging areas or unpaved road surfaces.

Source: LSA, *Air Quality Impact Analysis Henry Mayo Newhall Memorial Hospital Master Plan City of Santa Clarita*, June 2008; refer to Appendix F1.

OPERATIONAL IMPACTS

Level of Significance Prior to Mitigation: Potentially Significant Impact.

Impact Analysis:

Area Source and Mobile Source Emissions

Operation of the proposed project would result in stationary source emissions from natural gas usage and consumer products. The emissions associated with area sources would be small when compared to mobile source emissions. Based on the *Traffic Impact Analysis*, the proposed project would result in an increase of 7,571 daily trips. Using the CARB model URBEMIS2007, emissions associated with these proposed land uses were calculated and are included in *Table 5.6-10*, *Long-Term Operational Emissions*.

Table 5.6-10
Long-Term Operational Emissions

Source	Pollutant Emissions (lbs/day)					
	CO	ROC	NO_X	SO_2	PM_{10}	$PM_{2.5}$
Project Land Uses						
Medical Offices	310	28	42	0.56	91	18
Hospital	110	9.5	14	0.19	30	5.9
Total Project Emissions	420	38	56	0.75	120	24
SCAQMD Thresholds	**550**	**55**	**55**	**150**	**150**	**55**
Significant?	**No**	**No**	**Yes**	**No**	**No**	**No**

Source: LSA, *Air Quality Impact Analysis Henry Mayo Newhall Memorial Hospital Master Plan City of Santa Clarita*, June 2008; refer to Appendix F1.

Table 5.6-10 shows that the increase in emissions of NO_X due to project implementation would exceed the SCAQMD daily operational emissions threshold. Thus, a significant impact would occur with regard to operational area source emissions. However, compliance with *Title 24*, the *California Building Code*, the City's *Unified Development Code,* the conditions of approval for the project, and Mitigation Measure AQ5, would reduce impacts to a less than significant level.

Despite great progress in air quality improvement, approximately 146 million people nationwide lived in counties with pollution levels above the NAAQS in 2002. Out of the 230 nonattainment areas identified during the 1990 CAA Amendment designation process, 124 areas remain as nonattainment today. In these nonattainment areas, however, the severity of air pollution episodes has decreased. Air quality in the SCAB in the past 20 years has improved steadily and dramatically, even with the tremendous increase in population, vehicles, and other sources.

As shown in *Table 5.6-2*, long-term exposure to elevated levels of criteria pollutants could result in potential health effects. However, as stated in the Thresholds of Significance, emissions thresholds established by the air district are used to manage total regional emissions within an air basin based on the air basin attainment status for criteria pollutants. These emissions thresholds were established for individual projects that would contribute to regional emissions and pollutant

concentrations that may affect or delay the projected attainment target year for certain criteria pollutants.

Due to the conservative nature of the thresholds and the basinwide context of an individual project's emissions, there is no direct correlation of a single project to localized health effects. One individual project having emissions exceeding a threshold does not necessarily result in adverse health effects for residents in the project vicinity. This is especially true when the criteria pollutant exceeding a threshold is one with regional effects, such as an ozone precursor like NO_X.

SCAQMD Localized Significance Threshold Analysis

Table 5.6-11, *Summary of Operational Localized Significance*, shows the calculated emissions for the proposed operational activities compared with the appropriate localized significance thresholds. The localized significance analysis only includes on-site sources; however, the URBEMIS2007 model outputs do not separate on-site and off-site emissions from mobile sources. For a worst-case scenario assessment, the emissions shown in *Table 5.6-11* include all on-site stationary sources and two percent of the mobile sources, which is an estimate of the amount of project-related vehicle traffic that will occur on site. Considering the average trip length included in the URBEMIS2007 model ranging from 7.4 to 15.4 miles, and a typical onsite travel distance of less than 500 feet (0.6 to 1.3 percent), the two percent assumption is conservative.

Table 5.6-11 shows that all operational emission rates are below the LST thresholds at 25 meters. Therefore, the proposed operational activity would not cause any significant localized air quality impacts.

Table 5.6-11
Summary of Operational Localized Significance

	Emission Rates (lbs/day)			
	CO	NO_X	PM_{10}	$PM_{2.5}$
Proposed Project	13	3.3	2.4	0.5
Localized Significance Threshold	**1,046**	**319**	**3**	**2**
Exceed Significance?	**No**	**No**	**No**	**No**

Source: LSA, *Air Quality Impact Analysis Henry Mayo Newhall Memorial Hospital Master Plan City of Santa Clarita*, June 2008; refer to Appendix F1.

Based on the above discussion, the potential for an individual project to significantly deteriorate regional air quality or contribute to a significant health risk is small, even if the emissions thresholds are exceeded by the project. Due to the overall improvement trend on air quality in the air basin, it is unlikely that the regional air quality or health risk would worsen from the current condition due to emissions from an individual project; thus less than significant impacts would occur in this regard.

Long-Term Microscale (CO Hot Spot) Analysis

The intersection vehicle turn volumes included in the *Traffic Impact Analysis* were used with the Caltrans CALINE4 model to evaluate the local CO concentrations at intersections most affected by project traffic. Ten intersections that either have the highest turn volumes or worst level of service

(LOS) in the project vicinity most affected by the project traffic were selected for the CO hot spot analysis. *Table 5.6-12*, *Existing CO Concentrations*, lists the CO concentrations for these intersections under the existing (2007) conditions. *Table 5.6-13*, *Interim Year CO Concentrations Without and With Project*, lists the CO concentrations in the interim year under the with and without project scenarios. It should be pointed out that, due to technological improvements, emissions factors (for vehicle exhaust) for future years would decrease. In addition, background concentrations in future years are anticipated to continue to decrease as the concerted effort to improve regional air quality progresses. Therefore, CO concentrations in the future years would generally be lower than existing conditions or more recent years in the future. It is anticipated that after the Master Plan Buildout Program is implemented, CO concentrations at similar locations would be lower, even with higher projected traffic volumes.

The proposed project would contribute to increased CO concentrations at intersections in the project vicinity. As shown in *Table 5.6-13*, none of the 10 intersections analyzed would have a one-hour CO concentration exceeding State standards of 20 ppm under the Interim Year with and without project conditions. The eight-hour CO concentration at these intersections would also be below the State standard of 9.0 ppm.

The project-related increase in CO concentrations at all ten intersections would be 0.1 ppm or less for the one-hour and eight-hour periods. Since no Federal or State standards would be exceeded, no CO hot spot would occur. Therefore, no air pollution control measures are necessary or recommended for CO emissions. Thus, impacts would be less than significant in this regard, and no air pollution control measures are necessary or recommended for CO emissions.

Table 5.6-12
Existing CO Concentrations[25]

Intersection	Receptor Distance to Road Centerline (Meters)	Existing One-Hour CO Concentration (ppm)	Existing Eight-Hour CO Concentration (ppm)	Exceeds State Standards	
				1-Hr	8-Hr
Rockwell Canyon and McBean	14	4.1	2.7	No	No
	17	3.9	2.5	No	No
	14	3.8	2.5	No	No
	14	3.8	2.5	No	No
McBean and Valencia	24	4.9	3.2	No	No
	22	4.7	3.1	No	No
	22	4.7	3.1	No	No
	24	4.6	3.0	No	No
McBean and Magic Mountain	19	5.2	3.4	No	No
	21	5.2	3.4	No	No
	22	4.9	3.2	No	No
	24	4.8	3.2	No	No
Orchard Village and Wiley Canyon	15	4.1	2.7	No	No
	14	4.0	2.6	No	No
	14	4.0	2.6	No	No
	15	3.9	2.5	No	No

[25] Includes ambient one-hour concentration of 2.0 ppm and ambient eight-hour concentration of 1.2 ppm. Measured at the 22224 Placerita Canyon Rd., Santa Clarita, CA, AQ Station (Los Angeles County).

Table 5.6-12 (Continued)
Existing CO Concentrations[26]

Intersection	Receptor Distance to Road Centerline (Meters)	Existing One-Hour CO Concentration (ppm)	Existing Eight-Hour CO Concentration (ppm)	Exceeds State Standards	
				1-Hr	8-Hr
Orchard Village and McBean	8	4.8	3.2	No	No
	8	4.6	3.0	No	No
	8	4.6	3.0	No	No
	15	4.5	3.0	No	No
Wiley Canyon and Lyons	17	4.1	2.7	No	No
	15	4.0	2.6	No	No
	15	4.0	2.6	No	No
	21	4.0	2.6	No	No
Tournament and Wiley Canyon	10	3.0	1.9	No	No
	8	3.0	1.9	No	No
	14	3.0	1.9	No	No
	8	2.9	1.8	No	No
Orchard Village and Lyons	15	3.8	2.5	No	No
	15	3.8	2.5	No	No
	17	3.7	2.4	No	No
	21	3.7	2.4	No	No
Newhall and Lyons	15	3.9	2.5	No	No
	14	3.7	2.4	No	No
	17	3.6	2.3	No	No
	14	3.5	2.3	No	No
Valencia and Magic Mountain	16	4.3	2.8	No	No
	17	4.2	2.7	No	No
	17	4.2	2.7	No	No
	17	4.2	2.7	No	No

Source: LSA, *Air Quality Impact Analysis Henry Mayo Newhall Memorial Hospital Master Plan, City of Santa Clarita*, June 2008; refer to Appendix F1.

[26] Includes ambient one-hour concentration of 2.0 ppm and ambient eight-hour concentration of 1.2 ppm. Measured at the 22224 Placerita Canyon Rd., Santa Clarita, CA, AQ Station (Los Angeles County).

Table 5.6-13
Interim Year CO Concentrations Without and With Project[27]

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1-hr/8-hr (ppm)	Without/With Project One-Hour CO Concentration (ppm)	Without/With Project Eight-Hour CO Concentration (ppm)	Exceeds State Standards	
					1-Hr	8-Hr
Rockwell Canyon and McBean	14 / 14	0.0 / 0.0	3.1 / 3.1	2.0 / 2.0	No	No
	17 / 17	0.1 / 0.1	3.0 / 3.1	1.9 / 2.0	No	No
	14 / 14	0.1 / 0.1	2.9 / 3.0	1.8 / 1.9	No	No
	14 / 14	0.0 / 0.0	2.9 / 2.9	1.8 / 1.8	No	No
McBean and Valencia	22 / 22	0.0 / 0.0	3.6 / 3.6	2.3 / 2.3	No	No
	22 / 22	0.0 / 0.0	3.6 / 3.6	2.3 / 2.3	No	No
	24 / 24	0.0 / 0.0	3.6 / 3.6	2.3 / 2.3	No	No
	24 / 24	0.0 / 0.0	3.6 / 3.6	2.3 / 2.3	No	No
McBean and Magic Mountain	19 / 19	0.1 / 0.0	3.8 / 3.9	2.5 / 2.5	No	No
	21 / 21	0.0 / 0.0	3.8 / 3.8	2.5 / 2.5	No	No
	21 / 21	0.0 / 0.0	3.7 / 3.7	2.4 / 2.4	No	No
	19 / 19	0.0 / 0.0	3.6 / 3.6	2.3 / 2.3	No	No
Orchard Village and Wiley Canyon	14 / 14	0.1 / 0.0	3.1 / 3.2	2.0 / 2.0	No	No
	15 / 15	0.0 / 0.0	3.1 / 3.1	2.0 / 2.0	No	No
	14 / 14	0.0 / 0.0	3.0 / 3.0	1.9 / 1.9	No	No
	17 / 14	0.1 / 0.1	2.9 / 3.0	1.8 / 1.9	No	No
Orchard Village and McBean	8 / 8	0.0 / 0.0	3.4 / 3.4	2.2 / 2.2	No	No
	16 / 8	0.1 / 0.1	3.3 / 3.4	2.1 / 2.2	No	No
	8 / 16	0.0 / 0.0	3.3 / 3.3	2.1 / 2.1	No	No
	15 / 8	0.1 / 0.1	3.2 / 3.3	2.0 / 2.1	No	No
Wiley Canyon and Lyons	17 / 17	0.0 / 0.0	3.1 / 3.1	2.0 / 2.0	No	No
	15 / 15	0.0 / 0.0	3.1 / 3.1	2.0 / 2.0	No	No
	16 / 15	0.1 / 0.1	3.0 / 3.1	1.9 / 2.0	No	No
	15 / 16	0.0 / 0.0	3.0 / 3.0	1.9 / 1.9	No	No
Tournament and Wiley Canyon	8 / 8	0.0 / 0.0	2.6 / 2.6	1.6 / 1.6	No	No
	10 / 10	0.0 / 0.0	2.6 / 2.6	1.6 / 1.6	No	No
	10 / 10	0.0 / 0.0	2.6 / 2.6	1.6 / 1.6	No	No
	8 / 8	0.0 / 0.0	2.6 / 2.6	1.6 / 1.6	No	No
Orchard Village and Lyons	15 / 15	0.0 / 0.0	3.2 / 3.2	2.0 / 2.0	No	No
	15 / 15	0.0 / 0.0	3.1 / 3.1	2.0 / 2.0	No	No
	17 / 17	0.0 / 0.0	3.1 / 3.1	2.0 / 2.0	No	No
	17 / 17	0.0 / 0.0	3.0 / 3.0	1.9 / 1.9	No	No
Newhall and Lyons	15 / 15	0.0 / 0.0	3.1 / 3.1	2.0 / 2.0	No	No
	17 / 17	0.0 / 0.0	3.0 / 3.0	1.9 / 1.9	No	No
	14 / 14	0.0 / 0.0	2.9 / 2.9	1.8 / 1.8	No	No
	14 / 14	0.1 / 0.0	2.8 / 2.9	1.8 / 1.8	No	No
Valencia and Magic Mountain	17 / 17	0.0 / 0.0	3.6 / 3.6	2.3 / 2.3	No	No
	16 / 16	0.0 / 0.0	3.5 / 3.5	2.3 / 2.3	No	No
	15 / 15	0.0 / 0.0	3.4 / 3.4	2.2 / 2.2	No	No
	17 / 17	0.0 / 0.0	3.3 / 3.3	2.1 / 2.1	No	No

Source: LSA, *Air Quality Impact Analysis Henry Mayo Newhall Memorial Hospital Master Plan, City of Santa Clarita*, June 2008; refer to Appendix F1.

[27] Includes ambient one-hour concentration of 2.0 ppm and ambient eight-hour concentration of 1.2 ppm. Measured at the 22224 Placerita Canyon Rd., Santa Clarita, CA, AQ Station (Los Angeles County).

Mitigation Measures:

AQ5 Prior to the issuance of building permits, the Building Official and/or Division of the State Architect for the hospital shall ensure the proposed uses be designed to use low Volatile Organic Compound (VOC) paints and solvents throughout. In addition, this shall be specified on the building plans.

Level of Significance After Mitigation: Less Than Significant Impact.

AIR QUALITY MANAGEMENT PLAN CONSISTENCY

Level of Significance Prior to Mitigation: Less Than Significant Impact.

Impact Analysis: A potentially significant impact to air quality would occur if a project would conflict with, or obstruct the implementation of, the applicable air quality plan. Although the proposed project would represent an incremental negative impact to air quality in the South Coast Air Basin, of primary concern is that project-related impacts have been properly anticipated in the regional air quality planning process and reduced whenever feasible. Therefore, it is necessary to assess the project's consistency with the SCAQMD's *2007 Air Quality Management Plan* (*2007 AQMP*).

According to the *CEQA Air Quality Handbook*, the purpose of the consistency finding is to determine if a project is inconsistent with the assumptions and objectives of the regional air quality plan, and thus if it would interfere with the region's ability to comply with Federal and State air quality standards. If a project is inconsistent, local governments need to consider project modifications or inclusion of mitigation to eliminate the inconsistency. It is important to note that even if a project is found consistent it could still have a significant impact on air quality under CEQA. Consistency with the *2007 AQMP* means that a project is consistent with the goals, objectives, and assumptions in the respective plan to achieve the Federal and State air quality standards.

Per the *CEQA Air Quality Handbook*, there are two main indicators of a project's consistency with the *2007 AQMP*:

- Whether the project would result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the 2007 AQMP; and

- Whether the project would exceed the 2007 AQMP's assumptions for 2030 or yearly increments based on the year of project build-out and phase.

A project is considered consistent with the *2007 AQMP* if it does not exceed the growth and planning assumptions in the *2007 AQMP*. The proposed project is consistent with the anticipated employment opportunities within the region, based on the Southern California Association of Governments *2004 Regional Transportation Plan/Growth Vision: Socio Economic Forecast Report* (*2004 Regional Transportation Plan*). The *2004 Regional Transportation Plan* provides anticipated growth analysis for Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties, which are all under the jurisdiction of Southern California Association of Governments.

The proposed project would not require amendments to the projections of the *2007 AQMP*, nor would the proposed project exceed growth projections identified in the *2004 Regional Transportation Plan*. The proposed project is consistent with the City of Santa Clarita's *Unified Development Code* and with the City's *General Plan* upon approval of the Master Plan. As such, development of the proposed project would not result in a significant impact relative to population increase.

Additionally, a project is considered consistent with the *2007 AQMP* if it is below the SCAQMD's thresholds of significance. As indicated in the Operational Impacts discussion, with the implementation of mitigation measures, the proposed project would not exceed SCAQMD regional or local thresholds for criteria pollutants. Also, implementation of the proposed project would not result in the formation of CO hotspots from the increase of LOS at study intersections. Mitigation Measures AQ2 and AQ5 have been required to reduce operational impacts.

In conclusion, the proposed project is consistent with the goals and policies of the City of Santa Clarita *General Plan* and the anticipated employment growth for the region. Therefore, with the implementation of the recommended mitigation measures, the proposed project would not result in long-term operational emissions that would exceed the SCAQMD's pollutant standards. As such, impacts regarding plan consistency are considered less than significant.

Mitigation Measures: Refer to Mitigation Measures AQ2 and AQ5. No other mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

5.6.4 CUMULATIVE IMPACTS AND MITIGATION MEASURES

SHORT-TERM CUMULATIVE CONSTRUCTION IMPACTS

Level of Significance Prior to Mitigation: Potentially Significant Impact.

Impact Analysis: The South Coast Air Quality Management District neither recommends quantified analyses of cumulative construction or operational emissions, nor does it provide separate methodologies or thresholds of significance to be used to assess cumulative construction or operational impacts. Instead, the South Coast Air Quality Management District recommends that a project's potential contribution to cumulative impacts should be assessed using the same significance criteria as those for project-specific impacts. Therefore, individual development projects that generate construction-related or operational emissions that exceed the South Coast Air Quality Management District recommended daily thresholds for project-specific impacts would also cause a cumulative considerable increase in emissions for those pollutants for which the Basin is non-attainment.

With respect to the proposed project's construction-period air quality emissions and cumulative Basin-wide conditions, the South Coast Air Quality Management District has developed strategies to reduce criteria pollutant emissions outlined in the *2007 Air Quality Management Plan* pursuant to Federal Clean Air Act mandates. As such, the proposed project would comply with South Coast Air Quality Management District Rule 403 requirements, and implement all feasible mitigation measures.

In addition, the proposed project would comply with adopted *2007 Air Quality Management Plan* emissions control measures. Per South Coast Air Quality Management District rules and mandates as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., Rule 403 compliance, the implementation of all feasible mitigation measures, and compliance with adopted *2007 Air Quality Management Plan* emissions control measures) would also be imposed on construction projects Basin-wide, which would include each of the related projects mentioned above.

Although compliance with South Coast Air Quality Management District rules and regulations would reduce construction related impacts, the project-related construction emissions have been concluded to be significant and unavoidable for PM_{10} and $PM_{2.5}$ emissions during the construction phase. Thus, it can be reasonably inferred that the project-related construction activities, in combination with those from other projects in the area would deteriorate the local air quality and lead to cumulative construction related impact. Therefore, even with the implementation of Mitigation Measures AQ1 through AQ4, significant and unavoidable cumulative construction air quality impacts would result.

Mitigation Measures: Refer to Mitigation Measures AQ1 through AQ4. No other mitigation measures are available that could reduce the significance of impacts.

Level of Significance After Analysis and Mitigation: Significant Unavoidable Impact.

LONG-TERM OPERATIONAL CUMULATIVE IMPACTS

Level of Significance Prior to Mitigation: Less Than Significant Impact.

Impact Analysis: As previously stated, the South Coast Air Quality Management District neither recommends quantified analyses of cumulative construction or operational emissions, nor does it provide separate methodologies or thresholds of significance to be used to assess cumulative construction or operational impacts. However, individual development projects that generate operational emissions that exceed the South Coast Air Quality Management District recommended daily thresholds for project-specific impacts would also cause a cumulative considerable increase in emissions for those pollutants for which the Basin is non-attainment.

With implementation of California Building Code requirements, the project Conditions of Approval and project Mitigation Measures, the proposed project would not result in significant operational air quality impacts to NOx. The Basin is in non-attainment status for PM_{10}, $PM_{2.5}$, and O_3 at the present time; however, the project's operational impacts do not exceed any of these pollutant as shown in *Table 5.6-10*. Therefore, the proposed project would not exacerbate non-attainment of air quality standards within the South Coast Air Basin or contribute to adverse cumulative operational air quality impacts.

Mitigation Measures: Refer to Mitigation Measures AQ1 through AQ5. No other mitigation measures are available that could reduce the significance of impacts.

Level of Significance After Analysis and Mitigation: Less Than Significant Impact.

GLOBAL CLIMATE CHANGE CUMULATIVE IMPACTS

Level of Significance Prior to Mitigation: Potentially Significant Impact.

GLOBAL CLIMATE CHANGE

Greenhouse Gas Emissions

Global climate change refers to changes in average climatic conditions on the Earth as a whole, including changes in temperature, wind patterns, precipitation and storms. Historical records indicate that global climate changes have occurred in the past due to natural phenomena; however, data indicate that current global conditions differ from past climate changes in rate and magnitude. Greenhouse gases (GHGs) in the Earth's atmosphere play a critical role in determining the Earth's surface temperature. Specifically, these gases allow high-frequency solar radiation to enter the Earth's atmosphere, but retain the low frequency energy which is radiated back from the Earth to space, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect. Increased concentrations of GHGs in the Earth's atmosphere have been linked to global climate change, and such conditions as rising surface temperatures, melting icebergs and snowpack, rising sea levels, and the increased frequency and magnitude of severe weather conditions. According to the Intergovernmental Panel on Climate Change (IPCC), the marked current increase in atmospheric greenhouse gases (GHGs) is the result of human activities, namely fossil fuel combustion, land use changes and agriculture.[28] Forest fires, decomposition, industrial processes, landfills, and consumption of fossil fuels for power generation, transportation, healing and cooking are the primary sources of GHG emissions.

GHGs include carbon dioxide (CO_2), methane (CH_4), ozone (O_3), water vapor, nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Carbon dioxide is the most abundant GHG in the atmosphere. The major GHGs are briefly described below.

Carbon Dioxide (CO_2) enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.

Methane (CH_4) is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.

Nitrous Oxide (N_2O) is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

Fluorinated Gases are synthetic, strong greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting

[28] IPCC, Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007.

substances. These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases. They include:

- *Chlorofluorocarbons (CFCs)* are used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone.
- *Perfluorocarbons (PFCs)* are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF_4] and perfluoroethane [C_2F_6]) were introduced as alternatives, along with HFCs, to the ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are also used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they are strong greenhouse gases.
- *Sulfur Hexafluoride (SF_6)* is a colorless gas soluble in alcohol and ether, slightly soluble in water. SF_6 is a strong greenhouse gas used primarily in electrical transmission and distribution systems as an insulator.
- *Hydrochlorofluorocarbons (HCFCs)* contain hydrogen, fluorine, chlorine, and carbon atoms. Although ozone-depleting substances, they are less potent at destroying stratospheric ozone than CFCs. They have been introduced as temporary replacements for CFCs and are also greenhouse gases.
- *Hydrofluorocarbons (HFCs)* contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong greenhouse gases (USEPA 2007).

The amount of CO_2 has increased by more than 35 percent since preindustrial times, and has increased at an average rate of 1.4 parts per million (ppm) per year since 1960, mainly due to combustion of fossil fuels and deforestation (IPCC 2007). These recent changes in climate change pollutants far exceed the extremes of the ice ages, and the global mean temperature is warming at a rate that cannot be explained by natural causes alone. Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants California Climate Action Team Report (CAT 2006).[29]

Climate-change scenarios are affected by varying degrees of uncertainty (IPCC 2007). The *2007 IPCC Fourth Assessment Report* projects that the range of global mean temperature increase from 1990 to 2100, under different climate-change scenarios, will range from 1.4 to 5.8°C (2.5 to 10.4°F). In the past, gradual changes in the earth's temperature changed the distribution of species, availability of water, etc. However, human activities are accelerating this process so that environmental impacts associated with climate change no longer occur in a geologic time frame but within a human life.

[29] California Environmental Protection Agency, *Climate Action Team, Climate Action Team Report to Governor Schwarzenegger and the Legislature (Executive Summary)*, March 2006.

Environmental Setting

California's GHG Sources and Relative Contribution

California is the second largest emitter of GHGs in the United States, only surpassed by Texas, and the tenth largest GHG emitter in the world (CEC 2005). However, because of more stringent air emission regulations, in 2001 California ranked fourth lowest in carbon emissions per capita and fifth lowest among states in CO_2 emissions from fossil fuel consumption per unit of Gross State Product (total economic output of goods and services). In 2004, California produced 492 million metric tons of CO_2-equivalent GHG emissions,[30] of which 81 percent were CO_2 from the combustion of fossil fuels, 2.8 percent were from other sources of CO_2, 5.7 percent were from methane, and 6.8 percent were from N_2O. The remaining 2.9 percent of GHG emissions were from High Global Warming Potential gases California Energy Commission (CEC 2006)[31].

California's transportation sector is the single largest generator of GHG emissions, producing 40.7 percent of the state's total emissions. Electricity consumption is the second largest source, comprising 22.2 percent. While out-of-state electricity generation comprises 22 to 32 percent of California's total electricity supply, it contributes 39 to 57 percent of the GHG emissions associated with electricity consumption in the state. Industrial activities are California's third largest source of GHG emissions, comprising 20.5 percent of state's total emissions. Other major sources of GHG emissions include mineral production, the waste combustion, land use changes, and forestry. Agriculture, commercial, and residential activities comprise the balance of California's greenhouse gas emissions (CEC 2006). Climate studies indicate that California is likely to see an increase of three to four degrees Fahrenheit over the next century.

Changes in California could include, but would not be limited to:

- The loss of sea ice and mountain snow pack, resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures;[32]
- Rise in global average sea level primarily due to thermal expansion and melting of glaciers and ice caps, the Greenland and Antarctic ice sheets;
- Decline of Sierra snowpack, which accounts for approximately half of the surface water storage in California, by 70 percent to as much as 90 percent over the next 100 years;[33]
- Increase in the number of days conducive to ozone formation by 25 to 85 percent (depending on the future temperature scenario) in high ozone areas of Los Angeles and the San Joaquin Valley by the end of the 21st century; and
- High potential for erosion of California's coastlines and seawater intrusion into the Delta and levee systems due to the rise in sea level.

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30 CO_2-equivalence is used to show the relative potential that different GHG have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, the global warming potential of a GHG, is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere.

31 California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004,* 2006. http://www.energy.ca.gov/global_climate_change/inventory/documents/ index.html

32 Ibid.

33 CAT, 2006.

Regarding the effects of global climate change on water resources, in June 2006, the California Department of Water Resources (DWR) published a Technical Memorandum Report entitled *Progress on Incorporating Climate Change into Planning and Management of California's Water Resources* in response to Executive Order S-3-05 (DWR 2006a). The report describes progress made in addressing climate change issues in existing water resources planning, management tools, and methodologies. While certain potential effects of climate change are presented, all of the results are identified in the report as preliminary. The results incorporate several assumptions, reflect a limited number of climate change scenarios, and do not address the likelihood of each scenario. Policy implications of climate change and recommendations to respond to future demands for water are identified as beyond the scope of the report.

In 2007, the DWR issued its Draft 2007 State Water Project (SWP) Delivery Reliability Report, which is distinguished from earlier SWP Delivery Reliability reports by including estimates of the potential reductions to SWP delivery reliability due to future climate changes. This report is addressed at length in Section 5.17 Water Supply of this EIR.

In sum, in California and western North America, (1) observations of the climate have showed a trend toward warmer winter and spring temperatures, (2) a smaller fraction of precipitation is falling as snow instead of rain, (3) there is a decrease in the amount of spring snow accumulation in the lower and middle elevation mountain zones, (4) there is an advance snowmelt of 5 to 30 days earlier in the springs, and (5) there is a similar shift (5 to 30 days earlier) in the timing of spring flower blooms (CAT 2006). According to the California Climate Action Team, even if actions could be taken immediately to curtail climate change emissions, the potency of emissions that have already built up, their long atmospheric lifetimes, and the inertia of the Earth's climate system could produce as much as 0.6°C (1.1°F) of additional warming. Consequently, some impacts from climate change are now unavoidable.

Regulatory Setting

International Regulation

Kyoto Protocol

The United Nations Framework Convention on Climate Change (UNFCC) is the international treaty dealing with climate change. It became effective in 1994. An amendment to the UNFCC, the Kyoto Protocol, was adopted in December 1997 and became effective in February 2005. As of September 2007, 175 countries have ratified the agreement. Under the Protocol, participating industrialized countries must reduce their GHG emissions by a collective average of five percent below their 1990 levels by 2012.

National Regulation

Currently there are no adopted regulations to combat global climate change on a national level. However, recent authority has been granted to the United States Environmental Protection Agency (USEPA) that may change the voluntary approach taken under the Bush administration to address this issue. On April 2, 2007, the United States Supreme Court ruled that the USEPA has the authority to, and should, regulate CO_2 emissions under the federal Clean Air Act (CAA).

State Regulation

Assembly Bill 32 (AB32). AB32, the Global Warming Solutions Act, was passed by the California state legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHGs. AB32 follows the emissions reduction targets established in Executive Order S-3-05, signed on June 1, 2005, which required the state's GHG emissions to be reduced to 1990 levels by the year 2020, and by 80 percent of 1990 levels by year 2050. Projected 2020 GHG emissions in California are estimated at 596 million metric tonnes of CO_{2e}. In December 2007, the California Air Resources Board (CARB) approved a 2020 emissions limit of 427 million metric tonnes of CO_{2e}. The 2020 target requires emissions reductions of 169 million metric tonnes, approximately 30 percent of the projected emissions. Pursuant to the requirements of AB 32, the state's reduction in GHG emissions will be accomplished through an enforceable statewide cap that will be phased in starting in 2012.

In order to effectively implement the cap, AB 32 directs CARB to develop appropriate regulations and establish a mandatory reporting system to track and monitor global warming emissions levels by January 2008. The Climate Action Registry Reporting Online Tool (CARROT) was established for that purpose. By January 1, 2009, CARB must prepare a plan demonstrating how the 2020 deadline can be met. However, as immediate progress in reducing GHGs can and should be made, AB 32 directed CARB and the newly created California Climate Action Team to identify a list of "discrete early action GHG reduction measures" that can be adopted and made enforceable by January 1, 2010. CAT is a consortium of representatives from state agencies that have been charged with coordinating and implementing GHG emission reduction programs that fall outside of CARB's jurisdiction. In June 2007, CARB adopted 37 early actions for reducing GHG emissions, of which three were identified as discrete early action measures. Since adoption of the initial early actions, CARB has expanded the early action list to include a total of 44 measures. In June 2008, CARB released its *Climate Change Draft Scoping Plan* (Scoping Plan) with additional GHG emission reduction measures. The draft Scoping Plan describes a proposed cap and trade program covering 85 percent of the state's GHG emissions, proposals for requiring utilities to produce a third of their energy from renewal sources, and implementation of the California Clean Car Law.[34] Several other initiatives and measures include full deployment of the Million Solar Roofs initiative, high-speed rail, water-related energy efficiency measures, and proposed regulations to reduce emissions from trucks and ships at California's ports.

Senate Bill 97. To address GHG emission and global climate change in General Plans and CEQA documents, Senate Bill 97 (Chapter 185, 2007) requires the Governor's Office of Planning and Research (OPR) to develop CEQA guidelines on how to address global warming emissions and mitigate project-generated GHGs. OPR is required to prepare, develop, and transmit these guidelines on or before July 1, 2009 for adoption by January 1, 2010. In addition, for projects where GHG emissions are considered significant, the California Attorney General has prepared a fact sheet listing various mitigation measures to reduce the project's contribution to global climate change impacts. As noted, in the meantime until guidelines are adopted, the OPR has issued its June 19, 2008 Technical Advisory regarding CEQA and Climate Change. This technical advisory recommends that lead agencies: 1) quantify GHG emissions; 2) analyze those impacts; and 3) propose mitigation to avoid, reduce or otherwise mitigate the impacts of those emissions.

[34] Implementation of the California Clean Car law includes implementation of the Low Carbon Fuel standard, which requires a waiver from the USEPA. The USEPA has denied a waiver and litigation is pending.

Baseline Setting

Existing GHG emissions from operational activities were calculated using the onroad vehicle emissions factors from the EMFAC2007 computer model, energy usage factors and emission rates from the California Energy Information Administration (EIA), and energy requirements for water usage from the California Energy Commission. Existing CO_2 emissions associated with the project are shown in *Table 5.6-14*, *Existing Greenhouse Gas Emissions - Operational*. The operational emissions shown in *Table 5.6-14* include the emissions from all project-related vehicles, emissions from electrical power plants producing electricity used by the existing facilities for all typical uses (lighting, electrical equipment) and for all water usage (including the transport of water, water treatment plant, water distribution, and wastewater treatment plant), and emissions from natural gas combustion.

Table 5.6-14
Existing Greenhouse Gas Emissions – Operational

Emission Source	Emissions (tons per year)			
	CO_2	CH_4	N_2O	CO_2e
Vehicles	15,000	5.8	1.6	16,000
Electricity Production	1,700	0.019	0.011	1,700
Natural Gas Combustion	700	0.013	0.013	700
Total Annual Emissions	**17,400**	**5.8**	**1.6**	**18,400**

CH_4 = methane
CO_2e = carbon dioxide equivalent
CO_2 = carbon dioxide
N_2O = nitrous oxide
Source: LSA, , August 2008; refer to Appendix F2.

Impact Analysis

The proposed project would contribute to global climate change through direct emissions of GHGs from on-site area sources, off-site energy production required for on-site activities, and vehicle trips generated by the proposed project. Project-related CO_2 emissions from operational activities were calculated using the onroad vehicle emissions factors from the EMFAC2007 computer model, energy usage factors, and emission rates from the California Energy Information Administration (EIA), and energy requirements for water usage from the California Energy Commission. CO_2 emissions associated with the proposed project are shown in *Table 5.6-15* and *Table 5.6-16*, for construction and operation, respectively. The operational emissions shown in *Table 5.6-15* include the emissions from all project-related vehicles, emissions from electrical power plants producing electricity used by the proposed project for all typical uses (lighting, electrical equipment) and for all water usage (including the transport of water, water treatment plant, water distribution, and wastewater treatment plant) and emissions from natural gas combustion.

Table 5.6-15
Project Greenhouse Gas Emissions/Operational
(Does Not Include Existing Facilities)

Emission Source	Emissions (tons per year)			
	CO_2	CH_4	N_2O	CO_2e
Vehicles	25,000	9.7	2.7	26,000
Electricity Production	3,500	0.038	0.021	3,500
Natural Gas Combustion	1,400	0.027	0.026	1,400
Total Annual Emissions	**29,900**	**9.8**	**2.7**	**30,900**
CH_4 = methane	CO_2 = carbon dioxide			
CO_2e = carbon dioxide equivalent	N_2O = nitrous oxide			
Source: LSA, August 2008, refer to Appendix F2.				

Due to the global nature of the climate change phenomenon and the scale of the emissions, total emissions are expressed in units of teragrams (a trillion [10^{12}] grams or 1 million metric tons [tonnes]) per year (Tg/year). This is the standard metric unit used worldwide. The total annual emissions of 30,900 tons/year of CO_2e is approximately 0.028 million metric tonnes of CO_2e. As a comparison, the existing emissions from the entire SCAG region are estimated to be approximately 176.79 million metric tonnes of CO_2e per year and approximately 496.95 million metric tonnes of CO_2e per year for the entire State.

Project Construction Activities

Project construction activities would consume fuel and result in the generation of GHGs. Worst case daily construction CO_2 emissions from project-related construction activities are projected using the URBEMIS2007 computer model and included in *Table 5.6-16*, *Project-Generated CO_2 Emissions - Construction*. Construction GHG emissions would cease upon completion of the construction of the proposed project, and would therefore be temporary in nature. The only GHG the URBEMIS2007 model considers is carbon dioxide (CO_2). The exhaust of construction equipment does contain small amounts of other GHGs, such as methane (CH_4) and nitrous oxide (N_2O). A conservative method to estimate these emissions and calculate the carbon dioxide equivalent (CO_2e) is to increase the CO_2 emissions rate by 10 percent. *Table 5.6-16* also shows this estimation of CO_2e.

Table 5.6-16
Project-Generated CO_2 Emissions – Construction

Construction Phases	CO_2	CO_2e
Demolition	1,100	1,210
Mass Grading	8,700	9,570
Fine Grading	2,400	2,640
Trenching	1,800	1,980
Paving	2,300	2,530
Building	4,900	5,390
Coating	95	105
Source: LSA Associates, Inc., August 2008.		

Construction GHG emissions would cease upon completion of construction of the proposed project. GHG emissions generated during construction would represent a small fraction of total project-related emissions. Therefore, GHG emissions generated by project-related construction activities are deemed less than significant because, on balance, they would neither help nor hinder the achievement of state goals nor of any applicable adopted GHG reduction plan and would not consume excessive energy resources compared to Business As Usual.

Project Operations

For operational activities, the proposed project's GHG emissions can be viewed as emanating from three sources. Scope 1 emission sources are owned or controlled directly by the project (i.e., natural gas combustion, boilers, furnaces, etc.). Scope 2 emission sources are GHG emissions from energy (purchased energy, energy from water use, energy from waste disposal). Scope 3 emissions are indirect emissions that are a consequence of activities of the project, which are not owned or controlled by the project, including GHG emissions from transportation sources. The proposed project would generate GHG emissions primarily in the form of vehicle exhaust and in the consumption of electricity and natural gas for heating.

CARB and the Climate Action Team (CAT) have adopted an Early Action Plan under AB 32 to identify early action measures to reduce GHG emissions within the State. Among those measures to be initiated within the 2007 to 2009 period that are relevant to new development are measures for energy efficiency, including use of light-covered (cooler) paving, cool roofs, and shade trees to reduce the heat island effect. In addition, in 2007, the CEC published, *The Role of Land Use in Meeting California's Energy and Climate Change Goals*. In this publication, the CEC acknowledged that California's land use patterns shape energy use and the production of GHG. In June 2008, CARB released its Draft Scoping Plan. CARB's Draft Scoping Plan states that a 30 percent reduction in GHG emissions from "Business-as-Usual" is necessary for the State to meet the 1990 GHG emissions goal by 2020. The Draft Scoping Plan relies primarily on a cap-and-trade system, regulations for fuel efficiency and transportation improvements, and improvements in energy efficiency to meet this 30 percent goal. According to Table 2 of the Draft Scoping Plan, emissions reductions from Early Actions identified by CARB and CAT to reduce GHG emissions for Capped Sectors, Transportation Sectors, and Electricity Sectors represent approximately 85 percent of the 169 million metric tons of the CO_{2e} emission reduction goal. As a result, proposed statewide regulations for energy efficiency and transportation and the proposed cap-and-trade system would achieve a 25 percent reduction from the statewide Business-as-Usual scenario. The remaining 5 percent reductions, to achieve a 30 percent reduction from the Business-as-Usual scenario, would be achieved through Land Use (0.5 percent), Water (0.8 percent), Waste and Recycling (0.1 percent), Forest sectors (0.9 percent), and High Global Warming Potential (2.8 percent) Sectors. *Table 5.6-17, Consistency Analysis with Applicable GHG Reduction Strategies to Reduce Climate Change in California*, lists applicable recommended GHG reduction strategies contained in the Draft 2008 Scoping Plan and analyzes the proposed project's consistency with them.

Table 5.6-17
Consistency Analysis with Applicable GHG Reduction Strategies to Reduce Climate Change in California

Applicable Recommended Reduction Strategies		Project Consistency
Reduction Strategy	**Description**	
Energy Efficiency Increase Combined Heat and Power (CHP) electricity production by 30,000 GWh Solar Water Heating (AB 1470 goal)	Buildings are the second largest contributor to California's GHG emissions. Significant GHG emissions reductions can be achieved through the design and construction of new green buildings because green buildings offer a comprehensive approach to reducing GHG emissions across multiple sectors (Energy Use, Water, Waste, and Transportation). Use of solar water heaters can reduce natural gas in homes and businesses. Combined heat and power systems maximize efficiency by making use of heat to generate electricity. The draft Scoping Plan considers using the green building frameworks as a mechanism that enable GHG reductions in other sectors.	New construction of the HMNMH Master Plan would comply with the energy-efficiency requirements required within the most recent building code. The current standards are the 2005 Building and Energy Efficiency Standards. At the time of construction, the CEC is anticipated to have adopted the new 2008 energy-efficiency standards. Because new building construction associated with the proposed project would occur after 2008, the proposed structures would meet the most stringent energy-efficiency standards adopted.
Water Sector Measures Water Use Efficiency Water Recycling Water System Energy Efficiency Reuse Urban Runoff Increase Renewable Energy Projection Public Goods Charge	Water use requires significant amounts of energy. Approximately one-fifth of the electricity and a third of the non-power plant natural gas consumed in the state are associated with water use. Measures to increase water use efficiency and reduce would reduce electricity demand from the Water section, reducing GHG emissions.	The Valencia Water Company has prepared a Water Supply Assessment to determine the amount of available water for the proposed project. According to the Water Supply Assessment described in Section5.17, Water Supply, the Valencia Water Company would have sufficient water to serve the HMNMH Master Plan project. Mitigation measures for water efficiency have been incorporated into the proposed project so that the project would be consistent with the State's efforts to reduce energy associated with providing potable water supply.
Million Solar Roofs (Existing Program Target)	As part of the Million Solar Roofs Program, California has set a goal to install 3,000 megawatts of new, solar-electric systems by 2017. The program is a ratepayer-financed incentive program. Obtaining the incentives requires the building owners or developers to meet certain efficiency requirements, such as exceed Title 24 Building Energy Efficiency Standards. The program would offset electricity use from the grid, thereby reducing GHG emissions.	The applicant will have the ability to apply for incentives for utilizing solar roofs in accordance with this program.

Table 5.6-17 (Continued)
Consistency Analysis with Applicable GHG Reduction Strategies to Reduce Climate Change in California

Applicable Recommended Reduction Strategies		Project Consistency
Reduction Strategy	**Description**	
Local Government Actions and Regional Targets Community Energy Community Waste and Recycling Community Water and Wastewater Systems Community Transportations Community Design	Local actions governments can take through local and regional planning process can reduce GHG emissions associated with transportation, energy, waste/recycling, and water use. CARB encourages local governments to develop Climate Action Plans, set city/county 2020 targets to reduce GHG emissions, and incorporate GHG reduction measures and regional blueprint plans into General Plans.	To date, the City of Santa Clarita has produced a number of sustainable policies and programs, such as requiring right-of-way improvements for new development consistent with the General Plan, the planting of shade trees throughout parking lots, construction of bus turnouts, efficient site design for both motorists and pedestrians, adequate parking for vehicles and bicycles to accommodate new development, TDM requirements that promote a reduction in vehicle miles traveled, enhanced signalization and solid waste diversion efforts.
Other Applicable Measures Under Evaluation Indirect Source Rules for New Development Public Education and Programs to Reduce Vehicle Travel	In addition to the recommended measures, CARB is also evaluating other measures for possible inclusion in the scoping plan. Of these that may be applicable to the project include: indirect source rules and public education programs to reduce vehicle travel. Indirect source rules are designed to address air pollutant emissions associated with residential and commercial developments. Outreach programs include encouraging increased transit use, consolidation of vehicles, biking, walking, and employer programs (telecommute and flex-time work schedules) that could help reduce vehicle travel.	These other measures are currently under consideration therefore the project is neither consistent with nor inconsistent with the Statewide approach for reducing GHG emissions in this regard. However, the proposed project includes two bus stop locations for public transit access to the site, street improvements would be incorporated to relieve congestion, and a 20 percent on-site trip capture rate is anticipated due to the mix of land uses proposed.
Source: CARB 2008.		

The proposed project would generate emissions of GHGs primarily in the form of vehicle exhaust and in the consumption of electricity and natural gas for heating. The emissions from vehicle exhaust are controlled by the State and Federal governments and are outside the control of this project. Emissions from building heating systems would be minimized by compliance with State Title 24 regulations for building energy efficiency. Emissions from electricity production would occur at nearby power plants.

The proposed project would provide right-turn pockets and modify traffic signals along the McBean Parkway project frontage. A minimum of 58 feet of public right-of-way from the centerline along the project frontage plus additional right-of-way dedication to accommodate a new right-turn lane from eastbound McBean Parkway to southbound Orchard Village Road to address future traffic conditions would be dedicated as part of the proposed project. The proposed project would also

require mitigation measures TR1 through TR4, which minimize traffic-related impacts at four intersections. Mitigation Measures TR6 through TR8 would minimize long-term (2030) traffic-related impacts at three intersections; refer to Section 5.4, Traffic, for mitigation measure specifics. These traffic mitigation measures are in place to reduce traffic congestion and improve traffic flow. By improving the flow of traffic, fewer greenhouse gases would be emitted from vehicles, thus further reducing greenhouse gas emissions. There would be two bus stop locations along McBean Parkway to allow the public to access the hospital through public transportation. Providing public transportation to the project location would reduce the amount of trips traveled to the hospital using individual vehicles.

Since the proposed project land use retains the mix of hospital and medical office facilities, future on-site trip capture is accounted for in the traffic forecasts using a factor of 20 percent. The 20 percent factor was utilized since it accounts for the on-site trip capture known to occur to determine the capacity needs for the site and City roadways. The proposed project naturally reduces trip generation due to the mix of hospital and medical office facilities and an on-site trip capture of 20 percent is yielded. Thus, reducing vehicle trips reduces the amount of greenhouse gas emissions.

Mitigation Measures: Complying with the California Code of Regulation Standard, Title 24 and incorporating Mitigation Measures TR1 through TR4 and TR6 through TR8 in Section 5.4, Traffic, and AQ1 through AQ5 would reduce stationary-source, mobile-source, and energy emissions associated with the proposed project and would therefore reduce GHG emissions generated by the proposed project. Additional measures to reduce greenhouse gas emissions include installing light-colored paving (cooler), cool roofs, planting shade trees, light emitting diodes (LEDs) for outdoor lighting, and limiting the hours of outdoor lighting operation to hours of darkness. These additional measures would further reduce greenhouse gas emissions.

Refer to Mitigation Measures TR1 through TR4, TR6 through TR8, and AQ1 through AQ5.

AQ6 Install light-colored paving and cool roofs where feasible. The paving and roofs shall be specified on the building plans.

AQ7 Plant shade trees pursuant to City requirements and standards, and shall be specified on the building plans.

AQ8 Utilize light emitting diodes (LEDS) for outdoor lighting and limit the hours of outdoor lighting operation to hours of darkness. The location of outdoor lighting shall be specified on the building plans.

Level of Significance After Mitigation:

Project Level Impacts

Because no threshold has yet been established, in light of the mitigation measures imposed on the project, impacts are de minimis and therefore less than significant.

Cumulative Impacts

Scope 1 and Scope 2 Emission Sources

The project mix of hospital and medical office facilities account for a reduction in vehicle miles traveled associated with the project. In addition, Mitigation Measures AQ6 through AQ8 would reduce project-related GHG emissions to the extent feasible and would reduce GHG emissions associated with Scope 1 emission sources (on-site) and Scope 2 emission sources (energy). Consequently, with the implementation of these Mitigation Measures, and considering the project's design features and the City's standard conditions of approval, impacts for project-related Scope 1 and Scope 2 GHG emissions would be less than significant.

Scope 3 Emission Sources

While no thresholds for GHG emissions have been established by OPR, CARB, or SCAQMD, it is likely that if a significance threshold were adopted, project-related Scope 3 GHG emissions would exceed the proposed emissions threshold due to the scale of the proposed project. Transportation sources represent over 40 percent of the State's emissions and the project would contribute significantly to this sector. Despite the implementation of recommended Mitigation Measures, GHG emissions attributable to project-related Scope 3 emissions sources (mobile sources) would remain significant. Consequently, the proposed project's impact would remain significant and unavoidable in this regard.

5.6.5 SIGNIFICANT UNAVOIDABLE IMPACTS

Implementation of the proposed project would not result in long-term operational impacts. Exceedances of daily emissions thresholds established by the SCAQMD for criteria pollutants from project-related net change in vehicular and stationary sources emissions would not occur. CO concentrations would not exceed State and Federal CO standards; thus a less than significant impact would occur. Also, the proposed project would not conflict with the most recently adopted SCAQMD AQMP, thus resulting in less than significant impacts. In addition, the proposed project would result in a less than significant impact in regards to long-term operational cumulative and global climate change impacts.

However, the proposed project would result in a significant and unavoidable impact during short-term construction activities. The proposed project would exceed SCAQMD localized significance thresholds for PM_{10} and $PM_{2.5}$. Therefore, based on SCAQMD standard recommendations, the proposed project would also result in a significant and unavoidable cumulative impact in regards to construction-related impacts.

With respect to Global Climate Change, cumulative impacts associated with Scope 1 and Scope 2 emissions would be less than significant, and Scope 3 emissions would be significant and unavoidable. However, CEQA authorizes reliance on previously approved plans and mitigation programs that have adequately analyzed and mitigated GHG emissions to a less than significant level as a means to avoid or substantially reduce the cumulative impact of a project. Should the City of Santa Clarita adopt such a plan and/or mitigation program in the future, as envisioned under as its One Valley One Vision (OVOV) General Plan Update, projects that contribute to GHG emissions

consistent with those plans/programs would then also be considered less than significant regarding global climate change for purposes of CEQA.

If the City of Santa Clarita approves the Henry Mayo Newhall Memorial Hospital project prior to adoption of a comprehensive planning document that adequately analyzes and mitigates GHG emissions to a less than significant level as a means to avoid or substantially reduce the cumulative impact of a project, the City shall be required to adopt findings in accordance with Section 15091 of the *CEQA Guidelines* and prepare a Statement of Overriding Considerations in accordance with Section 15093 of the *CEQA Guidelines*.