Section 5.5
Air Quality/Greenhouse Gas Emissions

Air Quality/Greenhouse Gas Emissions

Section 5.5

5.5.1 PURPOSE

This section evaluates air quality associated with short- and long-term impacts resulting from buildout of the proposed *General Plan Update*. Information in this section is based primarily on the *CEQA Air Quality Handbook*, April 1993 (as revised through November 1993), prepared by the South Coast Air Quality Management District, the *Final 2007 Air Quality Management Plan for the South Coast Air Basin* (June 2007), prepared by the South Coast Air Quality Management District, and Air Quality Data (California Air Resources Board 2007 through 2009).

5.5.2 EXISTING REGULATORY SETTING

U.S. ENVIRONMENTAL PROTECTION AGENCY

The Environmental Protection Agency (EPA) is responsible for implementing the Federal Clean Air Act (FCAA), which was first enacted in 1955 and amended numerous times after. The FCAA established Federal air quality standards known as the National Ambient Air Quality Standards (NAAQS). These standards identify levels of air quality for "criteria" pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. The criteria pollutants are Ozone (O_3), Carbon Monoxide (CO), Nitrogen Dioxide (NO_2) (which is a form of nitrogen oxides [NO_X]), Sulfur Dioxide (SO_2) (which is a form of sulfur oxides [SO_X]), Particulate Matter (PM_{10}), and Fine Particulate Matter ($PM_{2.5}$), and Lead (Pb); refer to Table 5.5-1, *National and California Ambient Air Quality Standards*.

CALIFORNIA AIR RESOURCES BOARD

The California Air Resources Board (CARB) administers the air quality policy in California. The California Ambient Air Quality Standards (CAAQS) were established in 1969 pursuant to the Mulford-Carrell Act. These standards, included with the NAAQS in Table 5.5-1, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility reducing particulates, hydrogen sulfide, and sulfates.

The California Clean Air Act (CCAA), which was approved in 1988, requires that each local air district prepare and maintain an Air Quality Management Plan to achieve compliance with the CAAQS. The Air Quality Management Plan also serves as the basis for preparation of the State Implementation Plan (SIP) for the State of California. The amendments to the CCAA establish the CAAQS and a legal mandate to achieve these standards by the earliest practicable date. These standards apply to the same criteria pollutants as the FCAA and also include sulfate, visibility, hydrogen sulfide, and vinyl chloride; refer to Table 5.5-1.

Table 5.5-1
National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California[1]		Federal[2]	
		Standard[3]	Attainment Status	Standards[4]	Attainment Status
Ozone (O_3)	1 Hour	0.09 ppm (180 μg/m³)	**Nonattainment**	NA[5]	NA[5]
	8 Hours	0.07 ppm (137 μg/m³)	Unclassified	0.075 ppm (147 μg/m³)	**Nonattainment**
Particulate Matter (PM_{10})	24 Hours	50 μg/m³	**Nonattainment**	150 μg/m³	**Nonattainment**
	Annual Arithmetic Mean	20 μg/m³	**Nonattainment**	NA[6]	**Nonattainment**
Fine Particulate Matter ($PM_{2.5}$)	24 Hours	No Separate State Standard		35 μg/m³	Unclassified
	Annual Arithmetic Mean	12 μg/m³	**Nonattainment**	15 μg/m³	**Nonattainment**
Carbon Monoxide (CO)	8 Hours	9 ppm (10 mg/m³)	Attainment	9 ppm (10 mg/m³)	Attainment
	1 Hour	20 ppm (23 mg/m³)	Attainment	35 ppm (40 mg/m³)	Attainment
Nitrogen Dioxide (NO_2)[7]	Annual Arithmetic Mean	0.030 ppm (57 μg/m³)	NA	0.053 ppm (100 μg/m³)	Attainment
	1 Hour	0.18 ppm (339 μg/m³)	Attainment	0.100 ppm	NA
Lead (Pb)	30 days average	1.5 μg/m³	Attainment	N/A	NA
	Calendar Quarter	N/A	NA	1.5 μg/m³	Attainment
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	N/A	NA	0.030 ppm (80 μg/m³)	Attainment
	24 Hours	0.04 ppm (105 μg/m³)	Attainment	0.14 ppm (365 μg/m³)	Attainment
	3 Hours	N/A	NA	N/A	Attainment
	1 Hour	0.25 ppm (655 μg/m³)	Attainment	N/A	NA
Visibility-Reducing Particles	8 Hours (10 a.m. to 6 p.m., PST)	Extinction coefficient = 0.23 km@<70% RH	Unclassified	**No Federal Standards**	
Sulfates	24 Hour	25 μg/m³	Attainment		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m³)	Unclassified		
Vinyl Chloride	24 Hour	0.01 ppm (26 μg/m³)	Unclassified		

Source: California Air Resources Board and U.S. Environmental Protection Agency, February 16, 2010.

μg/m³ = micrograms per cubic meter; ppm = parts per million; km = kilometer(s); RH = relative humidity; PST = Pacific Standard Time.
N/A = Not Applicable

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter-PM_{10} 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. In 1990, the California Air Resources Board (CARB) identified vinyl chloride as a toxic air contaminant, but determined that there was not sufficient available scientific evidence to support the identification of a threshold exposure level. This action allows the implementation of health-protective control measures at levels below the 0.010 parts per million ambient concentration specified in the 1978 standard.
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. EPA also may designate an area as *attainment/unclassifiable*, if: (1) it has monitored air quality data that show that the area has not violated the ozone standard over a three-year period; or (2) there is not enough information to determine the air quality in the area. 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 μg/m³ 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.
3. Concentration is 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 mm of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
5. The Federal 1-hour ozone standard was revoked on June 15, 2005 in all areas except the 14 8-hour ozone nonattainment Early Action Compact (EAC) areas.
6. The Environmental Protection Agency revoked the annual PM_{10} standard in 2006 (effective December 16, 2006).
7. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).

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.). CARB, 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 CARB. Air quality control agencies, including the South Coast Air Quality Management District (SCAQMD), must incorporate air toxic control measures into their regulatory programs or adopt equally stringent control measures as rules within six months of adoption by CARB.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

The SCAQMD 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 AQMP*) relies on a multi-level partnership of governmental agencies at the Federal, State, regional, and local level. The *2007 AQMP* proposes policies and measures to achieve Federal and State standards for improved air quality in the South Coast Air Basin (Basin) and those portions of the Salton Sea Air Basin (formerly named the Southeast Desert Air Basin) that are under the SCAQMD jurisdiction.

The *2007 AQMP* 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 AQMP* 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 SIP for the Basin for the attainment of the Federal ozone air quality standard.

The *2007 AQMP* 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 AQMP* 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 SCAQMD, State, Federal Stationary and Mobile Source Control Measures, and the Southern California Association of Governments (SCAG) 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 AQMP* and its rules and regulations, the SCAQMD published the *CEQA Air Quality Handbook*.[1] 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 SCAQMD is in the process of developing an *Air Quality Analysis Guidance Handbook* to replace the current *CEQA Air Quality Handbook.*

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

Southern California Association of Governments (SCAG) 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. SCAG 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, SCAG 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 AQMP*. SCAG is responsible under the FCAA for determining conformity of projects, plans, and programs with the SCAQMD.

CALIFORNIA GLOBAL CLIMATE CHANGE REGULATORY PROGRAMS

Assembly Bill 1493

In response to the transportation sector accounting for more than half of California's carbon dioxide (CO_2) emissions, Assembly Bill (AB) 1493 (AB 1493, Pavley) was enacted on July 22, 2002. AB 1493 required CARB to set greenhouse gas (GHG) emission standards for passenger vehicles, light duty trucks, and other vehicles whose primary use is noncommercial personal transportation in the State. The bill required that CARB set the GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. In setting these standards,

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

CARB must consider cost effectiveness, technological feasibility, economic impacts, and provide maximum flexibility to manufacturers. CARB adopted the standards in September 2004. These standards are intended to reduce emissions of carbon dioxide and other GHGs (e.g., nitrous oxide and methane). Some currently used technologies that achieve GHG reductions include small engines with superchargers, continuously variable transmissions, and hybrid electric drive.

Assembly Bill 32

The Legislature enacted AB 32 (AB 32, Nuñez), the California Global Warming Solutions Act of 2006, which Governor Schwarzenegger signed on September 27, 2006 to further the goals of Executive Order S-3-05. AB 32 represents the first enforceable statewide program to limit GHG emissions from all major industries, with penalties for noncompliance. CARB has been assigned to carry out and develop the programs and requirements necessary to achieve the goals of AB 32. The foremost objective of CARB is to adopt regulations that require the reporting and verification of statewide GHG emissions. This program would be used to monitor and enforce compliance with the established standards. The first GHG emissions limit is equivalent to the 1990 levels, which are to be achieved by 2020. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 allows CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted. In order to advise CARB, it must convene an Environmental Justice Advisory Committee and an Economic and Technology Advancement Advisory Committee. In December 2008, CARB adopted a scoping plan to achieve reductions in GHG emissions in California. The plan indicates how reductions in significant GHG sources would be achieved through regulations, market mechanisms, and other actions.

Executive Order S-3-05

In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and GHG emissions should be reduced to 80 percent below 1990 levels by 2050. The Secretary of the California Environmental Protection Agency (the Secretary) is required to coordinate efforts of various agencies in order to collectively and efficiently reduce GHGs. Some of the agencies involved in the GHG reduction plan include Secretary of Business, Transportation, and Housing Agency, Secretary of Department of Food and Agriculture, Secretary of Resources Agency, Chairperson of CARB, Chairperson of the Energy Commission, and the President of the Public Utilities Commission. The Secretary is required to submit a biannual progress report to the Governor and State Legislature disclosing the progress made toward GHG emission reduction targets. In addition, another biannual report must be submitted illustrating the impacts of global warming on California's water supply, public health, agriculture, and the coastline and forestry, and reporting possible mitigation and adaptation plans to combat these impacts.

Executive Order S-1-07

On January 18, 2007, California further solidified its dedication to reducing GHGs by setting a new Low Carbon Fuel Standard for transportation fuels sold within the State. Executive Order S-1-07 sets a declining standard for GHG emissions measured in carbon dioxide equivalent gram per unit of fuel energy sold in California. The target of the Low Carbon Fuel Standard is to reduce the carbon intensity of California passenger vehicle fuels by at least ten percent by 2020. The Low Carbon Fuel Standard applies to refiners, blenders, producers, and importers of transportation fuels, and would use market-based mechanisms to allow these providers to choose how they reduce emissions during the "fuel cycle" using the most economically feasible methods. The Executive Order requires the Secretary of the California Environmental Protection Agency to coordinate with actions of the California Energy Commission, CARB, the University of California, and other agencies to develop a protocol to measure the "life cycle carbon intensity" of transportation fuels.

Senate Bill 97

Senate Bill (SB) 97 of 2007 requires the California Office of Planning and Research to develop CEQA guidelines for analysis and, if necessary, the mitigation of effects of GHG emissions to the Resources Agency. These guidelines for analysis and mitigation must address, but are not limited to, GHG emissions effects associated with transportation or energy consumption. On December 30, 2009, the Natural Resources Agency adopted the CEQA Guidelines Amendments prepared by OPR, as directed by SB 97. On February 16, 2010, the Office of Administration Law approved the CEQA Guidelines Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The CEQA Guidelines Amendments became effective on March 18, 2010. These new guidelines require a survey of existing climate change analyses performed by various lead agencies under CEQA[2] In his signing statement, Governor Arnold Schwarzenegger noted:

> *Current uncertainty as to what type of analysis of greenhouse gas emissions is required under the California Environmental Quality Act has led to legal claims being asserted, which would stop these important infrastructure projects. Litigation under CEQA is not the best approach to reduce greenhouse gas emissions and maintain a sound and vibrant economy. To achieve these goals, we need a coordinated policy, not a piecemeal approach dictated by litigation.*

Senate Bill 375

SB 375 would require metropolitan planning organizations to include sustainable communities strategies in their regional transportation plans. The purpose of SB 375 would be to reduce GHG emissions from automobiles and light trucks, require CARB to provide GHG emission reduction targets from the automobile and light truck sector for 2020 and 2035 by January 1, 2010, and update the regional targets until 2050. SB 375 would require certain transportation planning and

[2] http://ceres.ca.gov/ceqa/docs/Adopted_Text_of_SB97_CEQA_Guidelines_Amendments.pdf. Accessed July 2010.

programming activities to be consistent with the sustainable communities strategies contained in the regional transportation plan. The bill would also require affected regional agencies to prepare an alternative planning strategy to the sustainable communities strategies if the sustainable communities strategy is unable to achieve the GHG emissions reduction targets. Governor Schwarzenegger signed and approved SB 375 on September 30, 2008.

Senator Steinberg, author of SB 375, is also making efforts to clean up the bill. The clean up efforts include CEQA streamlining changes for projects that are consistent with the Sustainable Community Strategy (SCS). Currently, SB 375 applies those streamlining provisions to residential and mixed-use projects. The Governor and many interest groups are also lobbying to extend those provisions to Proposition 1B Transportation projects, state highway projects, and infrastructure, retail, and commercial development. A timetable to eliminate schedule conflicts with the new eight-year housing element and the four-year Regional Transportation Plans is also being considered. In addition to a clean up bill, there will continue to be ongoing discussions with CARB to coordinate AB 32 local land use implementation strategies with SB 375, including a new proposed CARB CEQA thresholds of significance proposal to determine which projects will be subject to AB 32 requirements.

5.5.3 EXISTING ENVIRONMENTAL SETTING

SOUTH COAST AIR BASIN

The Basin, in which the City of Artesia is located, is characterized as having a "Mediterranean" climate (a semi-arid environment with mild winters, warm summers, and moderate rainfall. The Basin is a 6,600-square mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino and San Jacinto Mountains to the north and east. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area in Riverside County. The Basin's terrain and geographical location (i.e., a coastal plain with connecting broad valleys and low hills) determine its distinctive climate.

The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. The climate is mild and tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the Basin is a function of the area's natural physical characteristics (weather and topography), as well as man-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of pollutants throughout the Basin.

CLIMATE

The climate in the Basin is characterized by moderate temperatures and comfortable humidity, with precipitation limited to a few storms during the winter season (November through April). The average annual temperature varies little throughout the Basin, averaging 75 degrees Fahrenheit. However, with a less pronounced oceanic influence, the eastern inland portions of

the Basin show greater variability in annual minimum and maximum temperatures. January is usually the coldest month at all locations, while July and August are usually the hottest months of the year.

Although the Basin has a semi-arid climate, the air near the surface is moist due to the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the Basin by offshore winds, the ocean effect is dominant. Periods with heavy fog are frequent, and low stratus clouds, occasionally referred to as "high fog," are a characteristic climate feature. Annual average relative humidity is 70 percent at the coast and 57 percent in the eastern part of the Basin. Precipitation is typically 9 to 14 inches annually and is rarely in the form of snow or hail due to typically warm weather. The frequency and amount of rainfall is greater in the coastal areas of the Basin.

SUNLIGHT

The presence and intensity of sunlight are necessary prerequisites for the formation of photochemical smog. Under the influence of the ultraviolet radiation of sunlight, certain original or "primary" pollutants (mainly reactive hydrocarbons and oxides of nitrogen) react to form "secondary" pollutants (primarily oxidants). Since this process is time dependent, secondary pollutants can be formed many miles downwind from the emission sources. Because of the prevailing daytime winds and time-delayed nature of photochemical smog, oxidant concentrations are highest in the inland areas of Southern California.

TEMPERATURE INVERSIONS

Under ideal meteorological conditions and irrespective of topography, pollutants emitted into the air would be mixed and dispersed into the upper atmosphere. However, the Southern California region frequently experiences temperature inversions in which pollutants are trapped and accumulate close to the ground. The inversion, a layer of warm, dry air overlaying cool, moist marine air, is a normal condition in the southland. The cool, damp, and hazy sea air capped by coastal clouds is heavier than the warm, clear air that acts as a lid through which the marine layer cannot rise. The height of the inversion is important in determining pollutant concentration. When the inversion is approximately 2,500 feet above sea level, the sea breezes carry the pollutants inland to escape over the mountain slopes or through the passes. At a height of 1,200 feet, the terrain prevents the pollutants from entering the upper atmosphere, resulting in a settlement in the foothill communities. Below 1,200 feet, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire coastal basin. Usually, inversions are lower before sunrise than during the daylight hours. Mixing heights for inversions are lower in the summer and more persistent, being partly responsible for the high levels of ozone observed during summer months in the Basin. Smog in Southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods of time, allowing them to form secondary pollutants by reacting with sunlight. The Basin has a limited ability to disperse these pollutants due to typically low wind speeds.

EMISSIONS INVENTORY

Los Angeles County

Table 5.5-2, *Summary of 2008 Estimated Emissions Inventory for Los Angeles County*, summarizes the emissions of criteria air pollutants within Los Angeles County for various source categories. According to Los Angeles County's emissions inventory, mobile sources are the largest contributor to the estimated annual average air pollutant air levels for ROG, CO, NO_x, and SO_x. Areawide sources accounted for the highest concentrations of PM_{10} and $PM_{2.5}$.

Table 5.5-2
Summary of 2008 Estimated Emissions Inventory for Los Angeles County

Source Type/Category	Estimated Annual Average Emissions (Tons/Day)					
	ROG	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Stationary Sources						
Fuel Combustion	4.48	25.62	30.85	5.43	4.13	4.05
Waste Disposal	0.87	0.76	1.58	0.43	0.40	0.17
Cleaning and Surface Coating	25.32	0.04	0.04	0.01	0.43	0.41
Petroleum Production and Marketing	25.10	8.87	4.23	6.22	2.60	2.18
Industrial Processes	11.55	1.24	2.44	2.43	17.10	5.46
Subtotal (Stationary Sources)[1]	**67.33**	**36.53**	**39.14**	**14.52**	**24.65**	**12.27**
Areawide Sources						
Solvent Evaporation	81.56	-	-	-	0.01	0.01
Miscellaneous processes	5.32	50.83	15.87	0.42	134.89	30.51
Subtotal (Areawide Sources) [1]	**86.88**	**50.83**	**15.87**	**0.42**	**134.91**	**30.52**
Mobile Sources						
On-Road Mobile Sources	132.0	1,290.71	280.23	1.25	15.40	11.24
Other Mobile Sources	87.62	580.06	224.10	31.86	13.96	12.67
Subtotal (Mobile Sources) [1]	**219.68**	**1,870.78**	**504.33**	**33.12**	**29.36**	**23.91**
Grand Total for Los Angeles County[2]	**373.88**	**1,958.14**	**559.34**	**48.05**	**188.92**	**66.70**

Source: California Air Resources Board, California Emissions Facility Search Engine (CEFS), accessed at: http://www.arb.ca.gov/app/emsinv/emssumcat_query.php?F_DIV=-4&F_DD=Y&F_YR=2008&F_SEASON=A&SP=2009&F_AREA=CO&F_CO=19

Notes:
1 – Totals may be slightly off due to rounding.
2 – This total excludes emissions from natural sources (i.e., biogenic, geogenic, and wildfire sources).

City of Artesia

Table 5.5-3, *Summary of Estimated Existing Emissions Inventory for the City of Artesia*, summarizes the emissions of criteria air pollutants within the City of Artesia for area and mobile source categories. According to the City's emissions inventory, mobile sources are the largest contributor to the estimated annual average air pollutant levels.

Table 5.5-3
Summary of Estimated Existing Emissions Inventory for the City of Artesia

Source Type/Category[2]	Estimated Annual Average Emissions (Tons/Year)[1]					
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Sources						
Natural Gas Combustion	1.17	15.33	7.98	0.00	0.03	0.03
Landscaping Equipment	4.53	0.29	25.72	0.00	0.07	0.07
Consumer Products	43.16	-	-	-	-	-
Architectural Coatings	5.17	-	-	-	-	-
Subtotal (Area Sources)[3]	**54.03**	**15.62**	**33.70**	**0.00**	**0.10**	**0.10**
Indirect Sources						
Energy Consumption[4]	0.267	30.7	0.005	3.20	1.07	NA[5]
Subtotal (Indirect Sources)[3]	**0.267**	**30.7**	**0.005**	**3.20**	**1.07**	**NA[5]**
Mobile Sources (by land use category)						
Low Density Residential	43.14	60.19	512.60	0.53	92.04	17.94
High Density Residential	16.31	22.06	187.89	0.20	33.74	6.58
Commercial General	93.31	141.68	1,156.36	1.24	215.95	42.02
Institutional	2.55	3.72	30.74	0.03	5.69	1.11
Light Manufacturing and Industrial	6.68	9.24	77.84	0.08	14.23	2.77
Subtotal (Mobile Sources)[3]	**161.99**	**236.89**	**1,965.43**	**2.08**	**361.65**	**70.42**
Grand Total for Artesia	**216.29**	**283.21**	**1,999.14**	**5.28**	**363.79**	**70.52**

Notes:
1 Emissions estimates calculated using URBEMIS 2007 (version 9.2.4).
2 Emissions estimates calculated using the land use categories/intensities depicted in Table 3-3, *2030 General Plan Update Buildout*.
3 Totals may be slightly off due to rounding.
4 Calculated utilizing the South Coast Air Quality Management District, *CEQA Handbook, Table A9-11*, April 1993 and the California Climate Action Registry.
5 The South Coast Air Quality Management District does not have emission factors for $PM_{2.5}$ from energy consumption.

MONITORED AIR QUALITY LEVELS

The SCAQMD and CARB monitor the local ambient air quality from approximately 250 air monitoring stations located across the State. Air quality monitoring stations usually measure pollutant concentrations ten feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. Each monitoring station is located within a Source Receptor Area (SRA). The communities within a SRA have similar climatology and ambient air pollutant concentrations. The City is located in the South Coastal Los Angeles County SRA (SRA 4).

The North Long Beach Monitoring Station is the air monitoring station located nearest the City of Artesia. Air quality data from 2007 to 2009 for the North Long Beach Monitoring Station is provided in Table 5.5-4, *Local Air Quality Levels*. The following air quality information briefly describes the various types of pollutants monitored at the local stations.

Table 5.5-4
Local Air Quality Levels

Pollutant	California Standard	Federal Primary Standard	Year	Maximum[2] Concentration	Days (Samples) State/Federal Std. Exceeded
1-hour Ozone (O_3)[1]	0.09 ppm for 1 hour	NA[5]	2007 2008 2009	0.099 ppm 0.093 0.089	1/0 0/0 0/0
8-hour Ozone (O_3)[1]	0.07 ppm for 8 hours	0.08 ppm for 8 hours	2007 2008 2009	0.073 ppm 0.074 0.067	NM/0 NM/0 NM/0
Carbon Monoxide (CO)[1]	9.0 ppm for 8 hour	9.0 ppm for 8 hour	2007 2008 2009	2.59 ppm 2.49 2.17	0/0 0/0 0/0
Nitrogen Dioxide (NO_2)[1]	0.18 ppm for 1 hour	0.053 ppm annual average	2007 2008 2009	0.107 ppm 0.125 0.111	0/0 0/0 0/0
Fine Particulate Matter ($PM_{2.5}$)[1, 3,4]	No Separate Standard	35μg/m³ for 24 hours	2007 2008 2009	82.8 μg/m³ 57.2 63.0	NA/12 NA/8 NA/6
Particulate Matter (PM_{10})[1, 3]	50 μg/m³ for 24 hours	150 μg/m³ for 24 hours	2007 2008 2009	232.0 μg/m³ 62.0 72.0	6/1 1/0 3/0

Source: Aerometric Data Analysis and Measurement System (ADAM), summaries from 2007 to 2009, http://www.arb.ca.gov/adam.

ppm = parts per million; PM_{10} = particulate matter 10 microns in diameter or less; NM = not measured; μg/m³ = micrograms per cubic meter; $PM_{2.5}$ = particulate matter 2.5 microns in diameter or less; NA = not applicable.

Notes:
1. Data collected from the North Long Beach Monitoring Station located at 3648 North Long Beach Boulevard, Long Beach, California 90807.
2. Maximum concentration is measured over the same period as the California Standards.
3. PM_{10} exceedances are based on State thresholds established prior to amendments adopted on June 20, 2002.
4. PM_{10} and $PM_{2.5}$ exceedances are derived from the number of samples exceeded, not days.
5. The Federal standard was revoked in June 2005.

Ozone. Ozone (O_3) occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. The troposphere extends approximately ten miles above ground level, where it meets the second layer, the stratosphere. The stratospheric (the "good" ozone) layer extends upward from about ten to 30 miles and protects life on earth from the sun's harmful ultraviolet rays (UV-B). "Bad" ozone is a photochemical pollutant, and needs volatile organic compounds (VOCs), Nitrogen Oxides (NO_X) and sunlight to form; therefore, VOCs and NO_X are ozone precursors. VOCs and NO_X are emitted from various sources throughout the City. Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and several hours in a stable atmosphere with strong sunlight. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems (such as forests and foothill plant communities) and damages agricultural crops and some man-made materials (such as rubber,

paint and plastics). Societal costs from ozone damage include increased healthcare costs, the loss of human and animal life, accelerated replacement of industrial equipment and reduced crop yields.

Carbon Monoxide. Carbon monoxide (CO) is an odorless, colorless toxic gas that is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. At high concentrations, CO can reduce the oxygen-carrying capacity of the blood and cause headaches, dizziness, and unconsciousness.

Nitrogen Dioxide. Nitrogen oxides (NO_X) are a family of highly reactive gases that are a primary precursor to the formation of ground-level O_3, and react in the atmosphere to form acid rain. NO_2 (often used interchangeably with NO_X) is a reddish-brown gas that can cause breathing difficulties at high levels. Peak readings of NO_2 occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries, and other industrial operations).

NO_2 can irritate and damage the lungs, and lower resistance to respiratory infections such as influenza. The health effects of short-term exposure are still unclear. However, continued or frequent exposure to NO_2 concentrations that are typically much higher than those normally found in the ambient air may increase acute respiratory illnesses in children and increase the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may aggravate eyes and mucus membranes and cause pulmonary dysfunction.

Coarse Particulate Matter (PM_{10}). PM_{10} refers to suspended particulate matter, which is smaller than ten microns or ten one-millionths of a meter. PM_{10} arises from sources such as road dust, diesel soot, combustion products, construction operations, and dust storms. PM_{10} scatters light and significantly reduces visibility. In addition, these particulates penetrate the lungs and can potentially damage the respiratory tract. On June 19, 2003, CARB adopted amendments to the statewide 24-hour particulate matter standards based upon requirements set forth in the Children's Environmental Health Protection Act (SB 25).

Fine Particulate Matter ($PM_{2.5}$). Due to recent increased concerns over health impacts related to fine particulate matter (particulate matter 2.5 microns in diameter or less), both State and Federal $PM_{2.5}$ standards have been created. Particulate matter impacts primarily affect infants, children, the elderly, and those with pre-existing cardiopulmonary disease. In 1997, the Environmental Protection Agency (EPA) announced new $PM_{2.5}$ standards. Industry groups challenged the new standard in court and the implementation of the standard was blocked. However, upon appeal by the EPA, the U.S. Supreme Court reversed this decision and upheld the EPA's new standards.

On January 5, 2005, the EPA published a Final Rule in the Federal Register that designates the Basin as a nonattainment area for Federal $PM_{2.5}$ standards. On June 20, 2002, CARB adopted amendments for statewide annual ambient particulate matter air quality standards. These standards were revised/established due to increasing concerns by CARB that previous standards were inadequate, as almost everyone in California is exposed to levels at or above the current State standards during some parts of the year, and the statewide potential for significant health

impacts associated with particulate matter exposure was determined to be large and wide-ranging.

Reactive Organic Gases and Volatile Organic Compounds. Hydrocarbons are organic gases that are formed solely of hydrogen and carbon. There are several subsets of organic gases including reactive organic gases (ROGs) and volatile organic compounds (VOCs). Both ROGs and VOCs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. The major sources of hydrocarbons are combustion engine exhaust, oil refineries, and oil-fueled power plants; other common sources are petroleum fuels, solvents, dry cleaning solutions, and paint (via evaporation).

Global Climate Change Gases. The natural process through which heat is retained in the troposphere is called the "greenhouse effect."[3] The greenhouse effect traps heat in the troposphere through a three fold process summarized as follows: Short wave radiation emitted by the Sun is absorbed by the Earth; the Earth emits a portion of this energy in the form of long wave radiation; and greenhouse gases (GHGs) in the upper atmosphere absorb this long wave radiation and emit this long wave radiation into space and toward the Earth. This "trapping" of the long wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect.

The most abundant GHGs are water vapor and carbon dioxide. Many other trace gases have greater ability to absorb and re-radiate long wave radiation; however, these gases are not as plentiful. For this reason, and to gauge the potency of GHGs, scientists have established a Global Warming Potential for each GHG based on its ability to absorb and re-radiate long wave radiation. The Global Warming Potential of a gas is determined using carbon dioxide as the reference gas with a Global Warming Potential of 1.

GHGs include, but are not limited to, the following:[4]

- *Water Vapor (H_2O)*. Although water vapor has not received the scrutiny of other GHGs, it is the primary contributor to the greenhouse effect. Natural processes, such as evaporation from oceans and rivers, and transpiration from plants, contribute 90 percent and 10 percent of the water vapor in our atmosphere, respectively.

  The primary human related source of water vapor comes from fuel combustion in motor vehicles; however, this is not believed to contribute a significant amount (less than one percent) to atmospheric concentrations of water vapor. The Intergovernmental Panel on Climate Change has not determined a Global Warming Potential for water vapor.

[3] The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth's surface to 10 to 12 kilometers.

[4] All Global Warming Potentials are given as 100 year Global Warming Potential. Unless noted otherwise, all Global Warming Potentials were obtained from the Intergovernmental Panel on Climate Change. Climate Change (Intergovernmental Panel on Climate Change, *Climate Change, The Science of Climate Change – Contribution of Working Group I to the Second Assessment Report of the IPCC,* 1996).

- *Carbon Dioxide (CO_2)*. Carbon dioxide is primarily generated by fossil fuel combustion in stationary and mobile sources. Due to the emergence of industrial facilities and mobile sources in the past 250 years, the concentration of carbon dioxide in the atmosphere has increased 35 percent.[5] Carbon dioxide is the most widely emitted GHG and is the reference gas (Global Warming Potential of 1) for determining Global Warming Potentials for other GHGs.

- *Methane (CH_4)*. Methane is emitted from biogenic sources, incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. In the United States, the top three sources of methane are landfills, natural gas systems, and enteric fermentation. Methane is the primary component of natural gas, which is used for space and water heating, steam production, and power generation. The Global Warming Potential of methane is 21.

- *Nitrous Oxide (N_2O)*. Nitrous oxide is produced by both natural and human related sources. Primary human related sources include agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The Global Warming Potential of nitrous oxide is 310.

- *Hydrofluorocarbons (HFCs)*. HFCs are typically used as refrigerants for both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is growing, as the continued phase out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) gains momentum. The Global Warming Potential of HFCs range from 140 for HFC-152a to 6,300 for HFC-236fa.

- *Perfluorocarbons (PFCs)*. Perfluorocarbons are compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semi conductor manufacturing. Perfluorocarbons are potent GHGs with a Global Warming Potential several thousand times that of carbon dioxide, depending on the specific PFC. Another area of concern regarding PFCs is their long atmospheric lifetime (up to 50,000 years).[6] The Global Warming Potential of PFCs range from 5,700 to 11,900.

- *Sulfur hexafluoride (SF_6)*. Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride is the most potent GHG that has been evaluated by the Intergovernmental Panel on Climate Change with a Global Warming Potential of 23,900. However, its global warming contribution is not as high as the Global Warming Potential would indicate due to its low mixing ratio compared to carbon dioxide (4 parts per trillion [ppt] in 1990 versus 365 parts per million [ppm]).[7]

[5] United States Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990 to 2004*, April 2006, http://www.epa.gov/climatechange/emissions/usinventoryreport.html.

[6] Energy Information Administration, *Other Gases: Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride*, October 29, 2001, http://www.eia.doe.gov/oiaf/1605/ggrpt/gwp_gases.html.

In addition to the six major GHGs discussed above (excluding water vapor), many other compounds have the potential to contribute to the greenhouse effect. Some of these substances were previously identified as stratospheric O_3 depletors; therefore, their gradual phase out is currently in effect. The following is a listing of these compounds:

- *Hydrochlorofluorocarbons (HCFCs)*. HCFCs are solvents, similar in use and chemical composition to CFCs. The main uses of HCFCs are for refrigerant products and air conditioning systems. As part of the Montreal Protocol, all developed countries that adhere to the Montreal Protocol are subject to a consumption cap and gradual phase out of HCFCs. The United States is scheduled to achieve a 100 percent reduction to the cap by 2030. The Global Warming Potentials of HCFCs range from 93 for HCFC-123 to 2,000 for HCFC-142b.[8]

- *1,1,1 trichloroethane*. 1,1,1 trichloroethane or methyl chloroform is a solvent and degreasing agent commonly used by manufacturers. The Global Warming Potential of methyl chloroform is 110 times that of carbon dioxide.[9]

- *Chlorofluorocarbons (CFCs)*. CFCs are used as refrigerants, cleaning solvents, and aerosols spray propellants. CFCs were also part of the EPA's Final Rule (57 FR 3374) for the phase out of O_3 depleting substances. Currently, CFCs have been replaced by HFCs in cooling systems and a variety of alternatives for cleaning solvents. Nevertheless, CFCs remain suspended in the atmosphere contributing to the greenhouse effect. CFCs are potent GHGs with Global Warming Potentials ranging from 4,600 for CFC 11 to 14,000 for CFC 13.[10]

SENSITIVE RECEPTORS

Sensitive populations are more susceptible to the effects of air pollution than the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxics and CO are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The sensitive receptors located within the City are listed in Table 5.5-5, *Sensitive Receptors*.

[7] United States Environmental Protection Agency, *High GWP Gases and Climate Change*, October 19, 2006, http://www.epa.gov/highgwp/scientific.html#sf6.

[8] United States Environmental Protection Agency, *Protection of Stratospheric Ozone: Listing of Global Warming Potential for Ozone Depleting Substances*, November 7, 2006, http://www.epa.gov/EPA-AIR/1995/October/Day-11/pr-1117.html.

[9] Ibid.

[10] United States Environmental Protection Agency, *Class I Ozone Depleting Substances*, March 7, 2006, http://www.epa.gov/ozone/ods.html.

Table 5.5-5
Sensitive Receptors

Type	Name	Street
Church	St Paul Evangelical Community Church	11428 Artesia Boulevard
	GG Evangelical Church	11625 178th Street
	Cerritos Presbyterian Church	11841 178th Street
	Jehovahs Witnesses	11972 178th Street
	Korean Independent Presby	18116 Arline Avenue
	Artesia-Cerritos United Methodist	18523 Arline Avenue
	Grace Samoan Assembly Of God	18415 Seine Avenue
	Netherlands Reformed Congregation	11953 186th Street
	First Baptist Church-Artesia	18400 Grayland Avenue
	Trinity Christian Center	18325 Horst Avenue
	Centro Cristiano Iglesia	12054 183rd Street
	Holy Family Catholic Church	18708 Clarkdale Avenue
	River Shore Korean Church	18718 Grayland Avenue
	Trinity Christian Reformed Church	18718 Grayland Avenue
	First Christian Reformed Church	18411 Alburtis Avenue
	New Life Community Church	18800 Norwalk Boulevard
	Church In Cerritos	11428 187th Street
Library	Artesia Library	18722 South Clarkdale Avenue.
Park	Artesia Park	Corner of South Street and Elaine Avenue
School	Niemes Elementary School	16715 Jersey Avenue
	Ross Middle High School	17707 Elaine Avenue
	CPC Preschool	11840 178th Street
	Kennedy School	17500 Belshire Avenue
	Montessori House of Children	18523 Arline Avenue
	Our Lady of Fatima School	18626 Clarkdale Avenue
	New Life Pre School	18800 Norwalk Boulevard
	Master Academy	12328 South Street
	Sigma Plus Academy	18743 Pioneer Boulevard
	Premier Academy	11700 South Street

Source: Google Earth, 2010.

5.5.4 SIGNIFICANCE THRESHOLDS AND CRITERIA

AIR QUALITY

Under *CEQA*, the SCAQMD is an expert commenting agency on air quality within its jurisdiction or impacting its jurisdiction. Under the FCAA, the SCAQMD has adopted Federal attainment plans for O_3 and PM_{10}. The SCAQMD reviews projects to ensure that they would not: (1) cause or contribute to any new violation of any air quality standard; (2) increase the frequency or severity of any existing violation of any air quality standard; or (3) delay timely attainment of any air quality standard or any required interim emission reductions or other milestones of any Federal attainment plan.

The *CEQA Air Quality Handbook* also provides significance thresholds for both construction and operation of projects within the SCAQMD jurisdictional boundaries. Exceedance of the SCAQMD thresholds could result in a potentially significant impact. However, ultimately the lead agency determines the thresholds of significance for impacts. If a project proposes development in excess of the established thresholds, as outlined in Table 5.5-6, *SCAQMD Emission Thresholds*, a significant air quality impact may occur and additional analysis is warranted to fully assess the significance of impacts.

Table 5.5-6
SCAQMD Emissions Thresholds

Phase	Pollutant (lbs/day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Construction	75	100	550	150	150	55
Operational	55	55	550	150	150	55

Source: South Coast Air Quality Management District, *CEQA Air Quality Handbook*, November 1993.

GREENHOUSE GASES

At this time, there is no absolute consensus in the State of California among CEQA lead agencies regarding the analysis of global climate change and the selection of significance criteria. In fact, numerous organizations, both public and private, have released advisories and guidance with recommendations designed to assist decision-makers in the evaluation of GHG emissions given the current uncertainty regarding when emissions reach the point of significance. That being said, several options are available to lead agencies.

First, lead agencies may elect to rely on thresholds of significance recommended or adopted by state or regional agencies with expertise in the field of global climate change. (See CEQA Guidelines, §15064.7(c)) However, to date, neither CARB nor SCAQMD have adopted significance thresholds for GHG emissions for residential or commercial development under

CEQA.[11] CARB has suspended all efforts to develop a threshold, and SCAQMD's threshold remains in draft form. Accordingly, this option (i.e., reliance on an adopted threshold) is not viable for the City of Artesia.

Second, lead agencies may elect to conclude that the significance of greenhouse gas emissions under CEQA is too speculative. However, the City has determined that this option is not viable due to the important focus on global climate change created by the various regulatory schemes and scientific determinations cited in this section.

Third, lead agencies may elect to use a zero-based threshold, such that any emission of greenhouse gases is significant and unavoidable. The City does not endorse this type of threshold because it may indirectly truncate the analysis provided in CEQA documents and the mitigation commitments secured from new development. Moreover, no state or regional agency with expertise in global climate change has endorsed a zero-based threshold, which would likely result in the preparation of extensive environmental documentation for even the smallest of projects, thereby inundating lead agencies and creating an administrative burden.

Fourth, lead agencies may elect to utilize their own significance criteria, so long as such criteria are informed and supported by substantial evidence. Here, the City has elected to identify its own significance criterion until such time as a state or regional threshold is adopted by a competent authority (e.g., CARB or SCAQMD). Recent amendments to the CEQA Guidelines, and specifically the addition of CEQA Guidelines Section 15064.4, subdivision (b), informed the City's selection of a significance criterion:

> *A lead agency should consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment:*
>
> *(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;*
> *(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;*
> *(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.*

[11] Of note, in December 2009, the San Joaquin Valley Unified Air Pollution Control District adopted guidance for use by local lead agencies in assessing the significance of a project's GHG emissions under CEQA. The guidance relies on the use of performance-based standards, and requires that projects demonstrate a 29 percent reduction in GHG emissions, from business-as-usual, to determine that a project would have a less-than-significant cumulative impact. This threshold is not so dissimilar from the criteria utilized by the City of Artesia, as defined further below, which effectuates a 28.5 percent emission reduction in order to support a finding that a project's emissions are not significant.

Appendix G of the CEQA Guidelines also has been revised to provide some guidance regarding the criteria that may be used to assess whether a project's impacts on global climate change are significant. The Appendix G environmental checklist form asks whether a project would: (i) generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or (ii) conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

Based on the above factors (and particularly the adopted addition of *State CEQA Guidelines* Section 15064.4, subdivisions (b)(2) and (b)(3)), the City of Artesia (the lead agency for the proposed project) has determined it is appropriate to rely on AB 32 as a benchmark for purposes of this EIR and use the statute to inform their judgment as to whether the proposed project's GHG emissions would result in a significant impact. (See *State CEQA Guidelines*, §15064, subd. (f)(1)) Accordingly, the following significance criterion is used to assess impacts:

> *Will the project's GHG emissions impede compliance with the GHG emissions reductions mandated in AB 32?*

The GHG emission levels will be analyzed to determine whether project approval would impede compliance with the GHG emissions reduction mandate established by the AB 32, which requires that California's GHG emissions be reduced to 1990 levels by 2020. As noted in the Scoping Plan[12], a reduction of 28.5 percent below the "business as usual" scenario is required to meet the goals of AB 32. Therefore, should the project reduce its GHG emissions by 28.5 percent or greater, impacts would be less than significant.

CARBON MONOXIDE THRESHOLDS

In addition, the significance of localized project impacts depends on whether ambient CO levels in the vicinity of a project are above or below State and Federal CO standards. If a project causes an exceedance of either the state one-hour or eight-hour CO concentrations, the project would be considered to have a significant local impact. If ambient levels already exceed a State or Federal standard, then project emissions would be 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.

CUMULATIVE EMISSIONS

The SCAQMD's *2007 AQMP* was prepared to accommodate growth, meet state and federal air quality standards, and minimize the fiscal impact that pollution control measures have on the local economy. According to the SCAQMD *CEQA Air Quality Handbook*, project-related emissions that fall below the established construction and operational thresholds should be considered less than significant unless there is pertinent information to the contrary. If a project exceeds these emission thresholds, the SCAQMD *CEQA Air Quality Handbook* states that the

[12] California Air Resources Board, *Climate Change Proposed Scoping Plan: A Framework for Change*, adopted December 2008.

significance of a project's contribution to cumulative impacts should be determined based on whether the rate of growth in average daily trips exceeds the rate of growth in population.

CEQA THRESHOLDS

Appendix G of the *CEQA Guidelines* contains the *Initial Study Environmental Checklist Form* used during preparation of the Project Initial Study; refer to Appendix 12.1, *Initial Study/Notice of Preparation*. The Checklist includes questions relating to air quality, which have been utilized as thresholds of significance in this Section. Accordingly, a significant environmental impact would occur if the Project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Exposes sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Based on these significance thresholds and criteria, the Project's effects have been categorized as either "effects found not to be significant" or "potentially significant impact." Feasible mitigation measures, which could avoid or minimize potentially significant impacts, are identified. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a "significant unavoidable impact."

5.5.5 PROJECT IMPACTS AND MITIGATION MEASURES

❑ GENERAL PLAN UPDATE GOALS, POLICIES, AND POLICY ACTIONS

The Air Quality and Climate Change Element Goals and Policies are outlined in Section 3.4.6, *Proposed General Plan Goals and Policies*. Additionally, the following Policies and Policy

Actions are relevant to air quality and climate change, and have been proposed in the General Plan Update:

SUSTAINABILITY ELEMENT

Urban Design

Community Policy SUS 3.1: Adopt sustainable building measures for new municipal buildings and major renovations.

Policy Action SUS 3.1.1: Educate municipal employees about sustainable building design and operations.

Policy Action SUS 3.1.2: Consider adopting green building standards for municipal buildings.

Community Policy SUS 3.2: Strongly encourage the use of green building techniques in new construction and major renovations throughout the City.

Policy Action SUS 3.2.1: Prioritize the development and implementation of an outreach and education program to promote green building practices by residents and businesses.

Policy Action SUS 3.2.2: Encourage and explore incentives or mandates for green building techniques in existing building retrofits as well as new buildings.

Community Policy SUS 3.3: Achieve and maintain a mix of affordable, livable and green housing types throughout the City for people of all socio-economic, cultural, and household groups (including seniors, families, singles and disabled).

Transportation

Community Policy SUS 5.1: Decrease vehicle miles traveled by increasing per vehicle ridership and decreasing the number of trips by autos and trucks.

Policy Action SUS 5.1.2: Wherever possible, encourage opportunities for "park-once" habits for business patrons. Reduce current subsidies to auto commuting by reducing parking required for new transit-oriented or mixed-use developments—with convenient parking reserved for carpoolers, bicycles, customers and guests.

Policy Action SUS 5.1.3: Consider alternative work schedules for City employees to reduce employee driving.

Policy Action SUS 5.1.4: Coordinate with neighboring jurisdictions to create an integrated system of bike routes, through such improvements as signage, additional bicycle lanes and paths, and additional bicycle racks.

Policy Action SUS 5.1.7: Coordinate with regional agencies to provide convenient access to commuter-rail and other transit opportunities.

Community Policy SUS 5.2: Decrease congestion on local and regional roadways to improve safety, reduce emissions and maintain mobility.

Policy Action SUS 5.2.1: Prioritize development and implementation of a traffic signal synchronization and optimization program.

Environmental and Public Health

Community Policy SUS 6.2: Protect and enhance environmental and public health by reducing or eliminating the use of hazardous and toxic materials; minimizing pollutants entering the air, soil, and water; and lessening the risks which environmental problems pose to human health and prosperity.

Policy Action SUS 6.2.3: Develop protocol to ensure that no one geographic or socioeconomic group in the City is being unfairly affected by environmental pollution.

Policy Action SUS 6.2.5: Investigate the feasibility of requiring parking lots to incorporate landscaping plans with greenery that holds and filters stormwater runoff while also reducing the heat island effect and creating a comfortable and safe pedestrian environment.

Climate Protection and Air Quality

Community Policy SUS 7.1: Encourage and, where feasible, mandate the implementation of best practices towards reducing greenhouse gas emissions.

Community Policy SUS 7.2: Cooperate with the State, the Southern California Association of Governments, and the Gateway Cities Council of Governments to achieve mandates imposed by AB 32, which calls for reduction of greenhouse gas emissions to 1990 levels by 2020;, by Executive Order S-3-05, which calls for a reduction of GHG emissions to 80% below 1990 levels by 2050; and by SB 375, which promotes and prioritizes transit-oriented development.

Policy Action SUS 7.2.1: Coordinate with Gateway Cities COG and participate in development of their Sustainable Communities Strategy, including a regional inventory of current GHG emissions, in compliance with SB 375.

Policy Action SUS7.2.2: Consider pursuit of State or Federal funding available for sustainable planning efforts and projects that aim to reduce GHG emissions.

Community Policy SUS 7.3: Work with community and regional partners to reduce the number of unhealthy air quality days per year based on an established baseline.

Policy Action SUS 7.3.1: Promote and participate in cooperative efforts with agencies and communities in the South Coast Air Basin to achieve clean air.

Policy Action SUS 7.3.2: Continue to implement the provisions of the Transportation Demand Management Ordinance.

❑ EFFECTS FOUND NOT TO BE SIGNIFICANT

In accordance with Section 15128, *Effects Not Found To Be Significant*, of the *CEQA Guidelines*, the following briefly discusses the reasons that various possible significant effects of the Project were determined not to be significant and were therefore not discussed in detail.

Threshold: *Would the Project create objectionable odors affecting a substantial number of people?*

Construction activities occurring under the proposed *General Plan Update* would generate airborne odors associated with the operation of construction vehicles (i.e., diesel exhaust) and the application of architectural coatings. However, these odors are not generally considered especially offensive. Emissions would occur during daytime hours only and would be isolated to the immediate vicinity of the construction site and activity. As such, these odors would not affect a substantial number of people and impacts would be limited to people living and working near the source. Due to the types of odors that would occur in the City and limited exposure, Project implementation would not create construction-related objectionable odors affecting a substantial number of people and impacts would be less than significant.

Potential operational airborne odors could be created by cooking activities associated with the residential and commercial (i.e., food service) uses within the City. These odors would be similar to existing residential and food service uses throughout the City and would be confined to the immediate vicinity of the new buildings. Restaurants are also typically required to provide ventilation systems that avoid substantial adverse odor impacts. The other potential source of odors would be new waste receptacles within the community. The receptacles would be stored in areas and in containers, as required by City and County Health Department regulations, and be emptied on a regular basis, before potentially substantial odors have developed. Consequently, implementation of the proposed *General Plan Update* would not create operational-related objectionable odors affecting a substantial number of people within the City and potential impacts would be less than significant.

❑ POTENTIALLY SIGNIFICANT IMPACTS

SHORT-TERM CONSTRUCTION EMISSIONS

■ **CONSTRUCTION ACTIVITIES UNDER THE PROPOSED GENERAL PLAN UPDATE COULD GENERATE A CONSIDERABLE INCREASE OF CRITERIA POLLUTANTS, AND THUS MAY VIOLATE AIR QUALITY STANDARDS.**

Impact Analysis: Implementation of the proposed *General Plan Update* would result in new emissions being generated from construction activities. The thresholds of significance that have been recommended by the SCAQMD for construction emissions were developed for individual development projects. Under the proposed *General Plan Update*, varying amounts of construction would likely occur over time until buildout of the proposed *General Plan Update* is achieved. Many of the individual projects would be small and generate construction emissions that would not exceed the SCAQMD's recommended thresholds of significance. Although the City would not consider these projects to cause a potentially significant air quality impact, each project would be required to implement the proposed *General Plan Update* measures (Air Quality and Climate Change Element Goal 1 Policies and Policy Actions) that would minimize construction-related emissions. Other projects could be large enough to generate construction emissions that exceed thresholds. Through the environmental review process for individual projects, additional mitigation may also be required to further reduce emissions and potential impacts; however, even with mitigation it may not be possible to mitigate impacts to a less than significant level.

In consideration of the proposed *General Plan Update*, which is an individual project under CEQA, the potential exists for a number of construction projects to occur every year. It would be speculative, to quantify the emissions related to construction activities under the proposed *General Plan Update*, as the scale and timing of each construction event is currently unknown. Because the thresholds are established for individual development projects, and it is assumed that some of the projects that would be implemented under the proposed *General Plan Update* could individually exceed the SCAQMD thresholds, the total amount of construction within the Planning Area under the proposed *General Plan Update* could also exceed the SCAQMD's recommended thresholds of significance, and this impact would be significant.

Implementation of proposed *General Plan Update* Goals, Policies, and Policy Actions specified above and Mitigation Measure AQ-1, would lessen construction-related impacts by reducing air pollutant emissions from construction activities. These measures call for the maintenance of construction equipment, the use of non-polluting and non-toxic building equipment, and minimizing fugitive dust. However, even with implementation of the Goals, Policies, Policy Actions, and recommended mitigation, construction-related emissions would remain significant and unavoidable.

Mitigation Measures:

AQ-1 For projects that may exceed daily construction emissions established by the South Coast Air Quality Management District (SCAQMD), Best Available Control Measures shall be incorporated to reduce construction emissions to below daily emission standards established by the SCAQMD. Appropriate control measures shall be determined on a project by project basis, and would be specific to the pollutant for which the daily threshold is exceeded. Such control measures shall include the following, among others:

- Minimizing simultaneous operation of multiple construction equipment units;
- Implementation of SCAQMD Rule 403, *Fugitive Dust Control Measures*;

- Watering the construction area to minimize fugitive dust;
- Require that off-road diesel powered vehicles used for construction shall be new low emission vehicles, or use retrofit emission control devices, such as diesel oxidation catalysts and diesel particulate filters verified by the California Air Resources Board; and
- Minimizing idling time by construction vehicles.

Level of Significance: Significant Unavoidable Impact.

LONG-TERM MOBILE AND STATIONARY SOURCE EMISSIONS

■ **FUTURE DEVELOPMENT UNDER THE PROPOSED GENERAL PLAN UPDATE COULD GENERATE INCREASES IN MOBILE AND STATIONARY SOURCE EMISSIONS, WHICH MAY EXCEED SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT AIR QUALITY STANDARDS.**

Impact Analysis: Implementation of the proposed *General Plan Update* would result in new emissions being generated due to buildout of the City. The thresholds of significance that have been recommended by the SCAQMD for these new emissions were developed for individual development projects. Under the proposed *General Plan Update*, varying amounts of development would likely occur over time until buildout of the proposed *General Plan Update* is achieved. Many of the individual projects would be small and generate mobile and stationary emissions that do not exceed the SCAQMD's recommended thresholds of significance. Although the City would not consider these projects to cause a potentially significant air quality impact, each project would be required to implement the proposed *General Plan Update* Goals, Policies, and Policy Actions (i.e., Air Quality and Climate Change Element Goal 1 Policies and Policy Actions, as well as those within the Land Use, Sustainability, and Circulation and Mobility Elements) that address air quality in order to minimize emissions. Through the environmental review process for individual projects, additional mitigation may also be required to further reduce emissions and potential impacts; however, even with mitigation it may not be possible to mitigate impacts to a less than significant level.

Table 5.5-7, *Summary of 2030 General Plan Buildout Estimated Emissions Inventory for the City of Artesia*, summarizes the emissions of criteria air pollutants within the City of Artesia for area and mobile source categories at buildout. According to the City's emissions inventory, mobile sources are the largest contributor to the estimated annual average air pollutant levels.

The thresholds of significance that have been recommended by the SCAQMD were established for individual development projects and are based on the SCAQMD's New Source Review emissions standards for individual sources of new emissions. They do not apply to cumulative development or multiple projects. Air quality impacts would be regional and not confined to the Artesia City limits. The destination of motor vehicles, which are the primary contributors to air pollution, vary widely and cross many jurisdictional boundaries. Future site-specific development proposals would be evaluated for potential air emissions once development details have been determined and are available. Individual projects may not result in significant air quality emissions. Goals, Policies, and Policy Actions in the proposed *General Plan Update*

would reduce the significance of such impacts. However, because the thresholds are established for individual development projects, and it is assumed that some of the projects that would be implemented under the proposed *General Plan Update* could individually exceed the SCAQMD thresholds, the impacts would remain significant and unavoidable.

Table 5.5-7
Summary of 2030 General Plan Buildout
Estimated Emissions Inventory for the City of Artesia

Source Type/Category[2]	Estimated Annual Average Emissions (Tons/Year)[1]					
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Sources						
Natural Gas Combustion	1.28	16.77	8.89	0.00	0.03	0.03
Landscaping Equipment	4.69	0.30	26.75	0.00	0.07	0.07
Consumer Products	46.32	-	-	-	-	-
Architectural Coatings	5.75	-	-	-	-	-
Subtotal (Area Sources)[3]	**58.04**	**17.07**	**35.64**	**0.00**	**0.10**	**0.10**
Indirect Sources						
Energy Consumption[4]	1.61	185.0	0.032	19.3	6.43	NA[5]
Subtotal (Indirect Sources)[3]	**1.61**	**185.0**	**0.032**	**19.30**	**6.43**	**NA**[5]
Mobile Sources (by land use category)						
Low Density Residential	44.47	62.05	528.40	0.55	94.87	18.49
High Density Residential	19.46	26.42	224.96	0.23	40.39	7.87
Commercial General	112.0	170.05	1,387.97	1.49	259.21	50.44
General Office Building	1.30	1.87	15.61	0.02	2.87	0.56
Institutional	2.71	3.96	32.74	0.03	6.06	1.18
Light Manufacturing and Industrial	6.45	8.92	75.09	0.08	13.73	2.67
Subtotal (Mobile Sources)[3]	**186.39**	**273.27**	**2,264.77**	**2.40**	**417.13**	**81.21**
Grand Total for Artesia	**246.04**	**475.34**	**2,300.44**	**21.70**	**423.66**	**81.31**

1 Emissions estimates calculated using URBEMIS 2007 (version 9.2.4).
2 Emissions estimates calculated using the land use categories/intensities depicted in Table 3-3, *2030 General Plan Update Buildout*.
3 Totals may be slightly off due to rounding.
4 Calculated utilizing the South Coast Air Quality Management District, *CEQA Handbook, Table A9-11*, April 1993 and the California Climate Action Registry.
5 The South Coast Air Quality Management District does not have emission factors for $PM_{2.5}$ from energy consumption.

Mitigation Measures: No mitigation measures beyond the Goals, Policies, and Policy Actions identified in the proposed *General Plan Update* are required.

Level of Significance: Significant Unavoidable Impact.

CARBON MONOXIDE HOTSPOTS

- **FUTURE DEVELOPMENT UNDER THE PROPOSED GENERAL PLAN UPDATE COULD GENERATE INCREASES IN CARBON MONOXIDE HOTSPOT EMISSIONS, WHICH MAY EXCEED SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT AIR QUALITY STANDARDS.**

Impact Analysis: Carbon monoxide (CO) emissions are a function of vehicle idling time, meteorological conditions, and traffic flow. Under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthful levels (i.e., adversely affecting residents, school children, hospital patients, the elderly, etc.).

The SCAQMD requires a quantified assessment of CO hotspots when a project increases the volume-to-capacity ratio (also called the intersection capacity utilization) by 0.02 (two percent) for any intersection with an existing level of service LOS D or worse. Because traffic congestion is highest at intersections where vehicles queue and are subject to reduced speeds, these hotspots are typically produced at intersections. However, at the programmatic stage of analysis for the *General Plan Update*, intersection capacity/queuing analyses are not performed.

As previously noted, the City is located in the Basin, which is designated as an attainment area for the Federal and State CO standards. There has been a decline in CO emissions even though vehicle miles traveled on U.S. urban and rural roads have increased. On-road mobile source CO emissions have declined 24 percent between 1989 to 1998 despite a 23 percent rise in motor vehicle miles traveled over the same 10 years. California trends have been consistent with national trends; CO emissions declined 20 percent in California from 1985 through 1997 while vehicle miles traveled increased 18 percent in the 1990s. Three major control programs have contributed to the reduced per-vehicle CO emissions: exhaust standards, cleaner burning fuels, and motor vehicle inspection/maintenance programs.

A detailed CO analysis was conducted in the *Federal Attainment Plan for Carbon Monoxide* (CO Plan) for the SCAQMD's *2003 Air Quality Management Plan*.[13] The locations selected for microscale modeling in the CO Plan are worst-case intersections in the Basin, and would likely experience the highest CO concentrations. Of these locations, the Wilshire Boulevard/Veteran Avenue intersection experience the highest CO concentration (4.6 ppm), which is well below the 35-ppm 1-hr CO Federal standard. The Wilshire Boulevard/Veteran Avenue intersection is one of the most congested intersections in Los Angeles County with an average daily traffic (ADT) volume of approximately 100,000 vehicles per day. Currently, the highest volumes in the City are along Pioneer Boulevard (approximately 32,581 vehicles per day between State Route [SR] 91 and Artesia Boulevard), which would experience an increase of approximately 9,012 ADT during *General Plan Update* 2030 buildout conditions. As the CO hotspots were not experienced at the Wilshire Boulevard/Veteran Avenue intersection, it can be reasonably inferred that CO hotpots would not be experienced at any locations within the City of Artesia due to the volume of traffic experienced under buildout conditions, and the relatively low ambient

[13] South Coast Air Quality Management District, Appendix V (Modeling and Attainment Demonstrations [V-4-26]) of the *Final 2003 Air Quality Management Plan for the South Coast Air Basin*, 2003.

concentration (refer to Table 5.5-4). Therefore, impacts would be less than significant in this regard.

Mitigation Measures: No mitigation measures beyond the Goals, Policies, and Policy Actions identified in the proposed *General Plan Update* are required.

Level of Significance: Less Than Significant.

CONSISTENCY WITH REGIONAL PLANS

- **BUILDOUT OF THE PROPOSED GENERAL PLAN UPDATE COULD CONFLICT OR OBSTRUCT IMPLEMENTATION OF THE SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENT'S REGIONAL COMPREHENSIVE PLAN GUIDELINES AND THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT'S AIR QUALITY MANAGEMENT PLAN.**

Impact Analysis: 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. According to the *CEQA Air Quality Handbook*, in order to determine consistency with the South Coast Air Quality Management District (SCAQMD) *Air Quality Management Plan* (*AQMP*) two main criteria must be addressed.

Criterion 1

With respect to the first criterion, SCAQMD methodologies require that an air quality analysis for a project include forecasts of project emissions in relation to contributing to air quality violations and delay of attainment.

a) Would the project result in an increase in the frequency or severity of existing air quality violations?

All future development projects would be required to comply with the *General Plan Update* Goals, Policies, and Policy Actions, as well as with existing SCAQMD regulations and permitting requirements (Mitigation Measure AQ-1). Compliance with regulations and permit requirements would ensure that new uses reduce emissions the extent feasible. At the program level analysis, emissions associated with development under *General Plan Update* buildout conditions would exceed SCAQMD thresholds. However, the SCAQMD thresholds of significance were developed for individual development projects, and not plan level documents. Development projects under the *General Plan Update* would be evaluated on a project-by-project basis. Individual projects would be required to comply with the Goals, Policies, and Policy Actions of the *General Plan Update* and SCAQMD regulations, and may require additional mitigation to ensure air quality impacts are reduced. Also, as the *General Plan Update* would result in less development than that permitted under the existing *General Plan*, fewer emissions would result with implementation of the *General Plan Update*. As a result, the proposed

General Plan Update would not conflict with the *2007 AQMP* as it would meet the first consistency criterion.

b) *Would the project cause or contribute to new air quality violations?*

The *General Plan Update* would permit less development than that currently allowed by the existing *General Plan*, which in turn would result in fewer emissions. Therefore, the proposed project would not have the potential to cause or affect a violation of the ambient air quality standards.

c) *Would the project delay timely attainment of air quality standards or the interim emissions reductions specified in the AQMP?*

The proposed project would result in less than significant impacts with regard to localized concentrations during project construction and operations. As such, the proposed project would not delay the timely attainment of air quality standards or AQMP emissions reductions.

Criterion 2

With respect to the second criterion for determining consistency with SCAQMD and SCAG air quality policies, it is important to recognize that air quality planning within the Basin focuses on attainment of ambient air quality standards at the earliest feasible date. Projections for achieving air quality goals are based on assumptions regarding population, housing, and growth trends in the City's *General Plan*. Thus, the SCAQMD's second criterion for determining project consistency focuses on whether or not the proposed *General Plan Update* exceeds the assumptions utilized in preparing the forecasts presented in the AQMP. Determining whether or not a project exceeds the assumptions reflected in the AQMP involves the evaluation of the three criteria outlined below. The following discussion provides an analysis of each of these criteria.

a) *Would the project be consistent with the population, housing, and employment growth projections utilized in the preparation of the AQMP?*

Implementation of the *General Plan Update* would not directly construct any new development projects. Rather, implementation of the *General Plan Update* would facilitate the development of new uses in the City. The *General Plan Update* proposes 4,948 dwelling units and 2,926,709 square feet of non-residential uses. The current *General Plan* permits buildout of 5,376 dwelling units and 7,453,530 square feet of non-residential uses. Therefore, the *General Plan Update* would permit 428 less dwelling units and 4,526,821 less square feet of non-residential uses. Thus, the *General Plan Update* buildout densities would be less than the existing *General Plan* buildout densities. The *General Plan Update* is considered to be accounted for in the *2007 AQMP* population, housing, and growth projections. As a result, the project would not conflict with the *2007 AQMP*, as it would meet the second consistency criterion.

b) Would the project implement all feasible air quality mitigation measures?

Individual development projects under the *General Plan Update* would be required to comply with emission reduction measures identified by the SCAQMD, Goals Policies, and Policy Actions within the *General Plan Update*, and any project-specific mitigation measures. As such, the proposed project meets this AQMP consistency criterion.

c) Would the project be consistent with the land use planning strategies set forth in the AQMP?

The proposed project includes Goals, Policies, and Policy Actions that would guide development within the City. Also, the *General Plan Update* would result in less development and land use intensities than currently allowed. Therefore, the *General Plan Update* would be consistent with the land use planning strategies within the *2007 AQMP*.

In conclusion, the proposed *General Plan Update* would not conflict with the *2007 AQMP* as it would meet the consistency criteria, and would not result in a long-term impact on the region's ability to meet State and Federal Ambient Air Quality Standards.

Mitigation Measures: Refer to Mitigation Measure AQ-1.

Level of Significance: Less Than Significant.

GREENHOUSE GAS EMISSIONS

- **IMPLEMENTATION OF THE PROPOSED PROJECT COULD GENERATE GREENHOUSE GAS EMISSIONS THAT MAY HAVE A SIGNIFICANT IMPACT ON THE ENVIRONMENT AND COULD CONFLICT WITH AN APPLICABLE GREENHOUSE GAS REDUCTION PLAN, POLICY, OR REGULATION.**

Impact Analysis: Currently, there is no adopted threshold of significance for determining the cumulative significance of a project's GHG emissions on global climate change. However, the available scientific evidence suggests that even without a net increase in GHG emissions, effects would remain significant due to past and existing emissions levels. In the most recent Intergovernmental Panel on Climate Change (IPCC) assessment report (2007), the IPCC acknowledges that anthropogenic climate change and sea level rise would continue for centuries due to the time scales associated with climate processes and feedbacks even if GHG concentrations were to be stabilized.[14] The IPCC further found that both past and future anthropogenic CO_2 emissions would continue to contribute to climate change and sea level rise for more than a millennium, due to the time scales required for the removal of this gas from the atmosphere.[15] Further, the IPCC assessment noted that defining what is dangerous

[14] Intergovernmental Panel on Climate Change, Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007.

[15] Ibid.

anthropogenic interference with the climate system and, consequently, the limits to be set for policy purposes are complex tasks that can only be partially based on science, as such definitions inherently involve normative judgments.[16]

The IPCC constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. It concluded that a stabilization of GHGs at 400 to 450 parts per million (ppm) carbon dioxide-equivalent concentration is required to keep global mean warming below two degrees Celsius, which in turn is assumed to be necessary to avoid dangerous climate change.

California Governor Arnold Schwarzenegger issued Executive Order S-3-05 in June 2005, which established the following GHG emission reduction targets:

- 2010: Reduce GHG emissions to 2000 levels;
- 2020: Reduce GHG emissions to 1990 levels; and,
- 2050: Reduce GHG emissions to 80 percent below 1990 levels.

Assembly Bill 32 requires that CARB determine what the statewide GHG emissions level was in 1990, and approve a statewide GHG emissions limit that is equivalent to that level, to be achieved by 2020. CARB has approved a 2020 emissions limit of 427 million metric tons of CO_2 equivalent ($MMTCO_2eq$).

Due to the nature of global climate change, it is not anticipated that any single development project would have a substantial effect on global climate change. It is difficult to deem a single development as individually responsible for a global temperature increase. In actuality, GHG emissions from the proposed project would combine with emissions emitted across California, the United States, and the world to cumulatively contribute to global climate change.

Effects of Climate Change on the Project

The primary effect of global climate change has been a rise in average global tropospheric temperature of 0.2 degrees Celsius per decade, determined from meteorological measurements worldwide between 1990 and 2005.[17] Climate change modeling using year 2000 emission rates shows that further warming would occur, which would include further changes in the global climate system during the current century.[18] Changes to the global climate system and ecosystems and to California would 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;[19]

[16] Ibid.

[17] Ibid.

[18] Ibid.

[19] Ibid.

- Rise in global average sea level primarily due to thermal expansion and melting of glaciers and ice caps and the Greenland and Antarctic ice sheets;[20]

- Changes in weather that include widespread changes in precipitation, ocean salinity, and wind patterns, and more energetic extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones;[21]

- Decline of the Sierra snow pack (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;[22]

- 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;[23] and

- High potential for erosion of California's coastlines and sea water intrusion into the Delta and levee systems due to the rise in sea level.[24]

While there is broad agreement on the causative role of GHGs to climate change, there is considerably less information or consensus on how climate change would affect any particular location, operation, or activity. The IPCC has published numerous reports on potential impacts of climate change on the human environment. These reports provide a comprehensive and up-to-date assessment of the current state of knowledge on climate change. Despite the extensive peer review of reports and literature on the impacts of global climate change, the IPCC notes the fact that there is little consensus as to the ultimate impact of human interference with the climate system and its causal connection to global warming trends.

The following climate change effects could affect the proposed project. However, the type and degree of the impacts that climate change would have on humans and the environment is difficult to predict at the local scale.

- Sea Level Rise. According to the IPCC, climate change is expected to raise sea levels by up to four feet. The City is approximately eight miles from the Pacific Ocean and ranges from approximately 45 to 68 feet above mean sea level. Therefore, sea level rise of this magnitude would be unlikely to inundate the City. Additionally, the effects related to sea level rise are speculative at this time. If determined to be a significant threat, protective measures such as levees would likely be installed by regional and local governments to protect urbanized areas.

[20] Ibid.

[21] Ibid.

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

[23] Ibid.

[24] Ibid.

- Natural Disasters. Climate change could result in increased flooding and weather-related disasters. The proposed *General Plan Update* is located approximately eight miles from the Pacific Ocean and would not be exposed to intense coastal storms. The frequency of large floods on rivers and streams could also increase. The proposed *General Plan Update* would not impede flood flows or be susceptible to increased flooding; thus, flood-related impacts would be less than significant even under an intensified flooding scenario.

- Wildfires. Climate change could result in increased occurrences and duration of wildfire events. The City is located within an urbanized area, and is surrounded by development on all sides. The City is not located adjacent to wildlands that may increase the risk of wildland fires. The warming climate could cause more frequent wildfires of great intensity. However, as the City is not considered susceptible to wildland fires, wildfire risks as a result of global climate change would be less than significant.

- Air Quality. Climate change would compound negative air quality impacts in the South Coast Air Basin, resulting in respiratory health impacts.[25] However, this would be a regional, not a project-specific effect.

Other predicted physical and environmental impacts associated with climate change include heat waves, alteration of disease vectors, biome shifts, impacts on agriculture and the food supply, reduced reliability in the water supply, and strain on the existing capacity of sanitation and water-treatment facilities. While these issues are a concern for society at large, none of these impacts would have a disproportionate effect on the implementation of the proposed *General Plan Update*.

Greenhouse Gas Emissions

Direct Project Related Sources of Greenhouse Gases

Direct project-related GHG emissions include emissions from construction activities, area sources, and mobile sources. Table 5.5-8, *Estimated Greenhouse Gas Emissions*, estimates the CO_2, N_2O, and CH_4 emissions of the proposed project based on the 2030 buildout densities. The *General Plan Update* is not anticipated to generate other forms of GHG emissions in quantities that would facilitate a meaningful analysis. Therefore, this analysis focuses on these three forms of GHG emissions.

Construction Emissions. Construction of future development within the City under the *General Plan Update* would result in GHG emissions from the use of construction equipment. Temporary air emissions would result from equipment associated with construction of the projected land uses identified in the proposed *General Plan Update.* However, as the details of the future construction activities are unknown at this time (i.e., demolition requirements, construction time frames, and total size of projects), it would be speculative to quantify GHG emissions associated with the development anticipated under the *General Plan Update*. CEQA

[25] California Environmental Protection Agency, *AB 1493 Briefing Package*, 2008.

does not require an agency to evaluate an impact that is "too speculative," provided that the agency identifies the impact, engages in a "thorough investigation" but is "unable to resolve an issue," and then discloses its conclusion that the impact is too speculative for evaluation. (*CEQA Guidelines* Section 15145, Office of Planning and Research commentary). Additionally, CEQA requires that impacts be evaluated at a level that is "specific enough to permit informed decision making and public participation" with the "production of information sufficient to understand the environmental impacts of the proposed project and to permit a reasonable choice of alternatives so far as environmental aspects are concerned." (*CEQA Guidelines* Section 15146, Office of Planning and Research commentary). Pursuant to *CEQA Guidelines* Section 15146(b):

> *An EIR on a project such as the adoption or amendment of a comprehensive zoning ordinance or a local general plan should focus on the secondary effects that can be expected to follow from the adoption or amendment, but the EIR need not be as detailed as an EIR on the specific construction projects that might follow.*

It should be noted that implementation of the *General Plan Update* Goals, Policies, and Policy Actions would reduce construction-related GHG emissions to a level below "business as usual."

Mobile Sources. Buildout of the 2030 *General Plan Update* would result in approximately 1,322,849 vehicle miles traveled (VMT). As seen in Table 5.5-8, GHGs associated with mobile sources would be 259,867.43 metric tons of CO_2 equivalent[26] per year ($MTCO_2eq$/year).

Area Sources. As seen in Table 5.5-8, buildout of the 2030 *General Plan Update* would result in 23,425.04 $MTCO_2eq$/year of area source emissions.

Total project-related direct operational emissions would result in 242,285.87 $MTCO_2eq$/year.

Indirect Project Related Sources of Greenhouse Gases

Electricity Consumption. Energy Consumption emissions were calculated using the SCAQMD's *CEQA Air Quality Handbook*,[27] the U.S. Energy Information Administration,[28] and *General Plan Update* buildout land use data; refer to Appendix 12.4, *Air Quality Data*. The emission factors for electricity use (771.62 pounds of CO_2 per megawatt hour [MWh], 0.00659 pounds of N_2O per MWh, and 0.4037 pounds of CH_4 per MWh) were obtained from the U.S. Energy Information Administration. As a result, the potential development within the City would indirectly result in 112,918.34 $MTCO_2eq$/year due to electricity usage; refer to Table 5.5-8.

Water Supply. Water demand for the proposed uses would be approximately 3,764 acre-feet per year, based on typical water consumption factors for the proposed land uses. Based on energy usage factors for water conveyance from the California Energy Commission, water transport

[26] Carbon dioxide equivalent is a quantity that describes, for a given mixture and amount of GHG, the amount of CO_2 that would have the same global warming potential, when measured over a specified timescale (generally 100 years).

[27] SCAQMD's *CEQA Air Quality Handbook*,[27] *Table A9-11*, November 1993.

[28] U.S. Energy Information Administration, *Domestic Electricity Emissions Factors 1999-2002*.

from the State Water Project consumes approximately 1,666 kilowatt hours [kWh] per acre-foot.[29] Emissions from indirect energy impacts due to water supply would result in 2,204.94 $MTCO_2eq$/year.

Table 5.5-8
Estimated Greenhouse Gas Emissions

Source	CO_2	N_2O		CH_4		Total Metric Tons of CO_2eq/yr[6]
	Metric Ttons/yr	Metric Tons/yr	Metric Tons of CO_2eq/yr[6]	Metric Tons/yr	Metric Tons of CO_2eq/yr[6]	
Operational Emissions						
Direct Emissions						
• Area Source[2]	19,171.0	12.82	3,972.69	13.40	281.35	*23,425.04*
• Mobile Source[2, 3]	218,504.0	0.13	41.47	15.02	315.36	*259,867.43*
Total Direct Emissions[7]	***237,675.0***	***12.95***	***4,014.16***	***28.42***	***596.71***	***242,285.87***
Indirect Emissions						
• Electricity Consumption[4]	112,497.11	0.96	297.69	5.88	123.54	*112,918.34*
• Water Supply[5]	2,195.88	0.021	6.41	0.127	2.66	*2,204.94*
Total Indirect Emissions[7]	***114,692.99***	***0.981***	***304.1***	***6.01***	***126.20***	***115,123.28***
Total Project-Related Operational Emissions WITHOUT Reductions	*357,409.15 $MTCO_2eq/yr$*					
Total Project-Related Operational Emissions WITH 41% Reductions	***210,871.40 $MTCO_2eq/yr$[7]***					

Notes:
1. Emissions calculated using CARB's Construction Equipment Emissions Table and the URBEMIS 2007 computer model.
2. Emissions calculated using URBEMIS 2007 computer model for CO_2 and the SCAQMD's *CEQA Handbook for N_2O and CH_4* (note that SCAQMD has the most comprehensive demand factors available).
3. Emissions calculated using URBEMIS 2007 computer model and EMFAC2007, *Highest (Most Conservative) Emission Factors for On-Road Passenger Vehicles and Delivery Trucks*.
4. Electricity Consumption emissions calculated using the SCAQMD's *CEQA Handbook* (note that SCAQMD has the most comprehensive demand factors available) and updated with factors from the California Energy Commission, *Reference Appendices for the 2008 Building Energy Efficiency Standards for Residential and Nonresidential Buildings*, revised June 2009.
5. Water usage based the City of Artesia, *Water Supply Evaluation for the Downtown General Plan Update*. Emissions are based on energy usage factors for water conveyance from the California Energy Commission, *Water Energy Use in California*, accessed July 2010. http://www.energy.ca.gov/research/iaw/industry/water.html
6. CO_2 Equivalent values calculated using the U.S. Environmental Protection Agency Website, *Greenhouse Gas Equivalencies Calculator*, http://www.epa.gov/cleanenergy/energy-resources/calculator.html, accessed July 2010.
7. Totals may be slightly off due to rounding.

Refer to Appendix 12.4, *Air Quality Data*, for detailed model input/output data.

Total project-related business as usual operational emissions (direct and indirect) would result in 357,409.15 $MTCO_2eq$/year without reductions taken from the proposed Goals, Policies, and Policy Actions within the *General Plan Update*. An analysis of the reduction measures is included below.

[29] California Energy Commission, Water Energy Use in California, Accessed July 2010. http://www.energy.ca.gov/2007publications/CEC-999-2007-008/CEC-999-2007-008.PDF.

Consistency With the California Attorney General's Mitigation Measures

The proposed *General Plan Update* would incorporate several features that are consistent with the California Office of the Attorney General's recommended measures to reduce GHG emissions. A list of the Attorney General's recommended measures and the project's compliance with each applicable measure are listed in Table 5.5-9, *Project Consistency with the Attorney General's Recommendations*. The *General Plan Update* would incorporate sustainable practices which include water, energy, solid waste, land use, and transportation efficiency measures.

Table 5.5-9
Project Consistency With the Attorney General's Recommendations

Attorney General's Recommended Measures	Project Compliance	Percent Reduction[1]
Smart growth, jobs/housing balance, transit-oriented development, and infill development through land use designations, incentives and fees, zoning, and public-private partnerships.	**Compliant.** The *General Plan Update* proposes an overall reduction in land uses, as compared to the existing *General Plan*. Additionally, Air Quality and Climate Change Element Goal 2 Policies and Policy Actions and Land Use Element Goal 1 Policies and Policy Actions of the *General Plan Update* address infill development projects that support job centers and transportation nodes. Also, implementation of Air Quality and Climate Change Element Goal 2 Policies and Policy Actions would increase residential and commercial densities around bus transit facilities. Additionally, several policies of the Land Use Element and the Circulation and Mobility Element promote and encourage the development of mixed-uses. These smart growth measures would inherently reduce vehicle reliance and associated GHG emissions from VMT.	16
Create transit, bicycle, and pedestrian connections through planning, funding, development requirements, incentives and regional cooperation; create disincentives for auto use.	**Compliant.** Air Quality and Climate Change Element Goals 1 and 2 Policies and Policy Actions encourage alternative modes of transportation. Increased light rail, vanpooling, carpooling, bicycling, pedestrian opportunities are addressed in order to create developments that would result in a decrease in auto dependency. Circulation and Mobility Element Goal 5 Policies and Policy Actions promote the use of public transit, and pedestrian and bicycle facilities. Goal 6 Policies and Policy Actions address regional coordination in order to improve the regional circulation system. Increased use of alternative transportation modes and improvement of the regional transportation system would inherently reduce VMT and mobile source GHG emissions. Sustainability Element Goal 3 Policies and Policy Actions also address smart land use planning by emphasizing higher density developments, mixed-uses, transit-oriented districts, and pedestrian and bicycle friendly circulation systems. Additionally, the Sustainability Element includes measures to reduce the VMT by increasing per vehicle ridership and decreasing vehicle trips. This would be accomplished through coordination with regional agencies and encouragement of alternative commute patterns (i.e., pedestrian, bicycle, transit, light rail, etc.).	15

Table 5.5-9 [continued]
Project Consistency With the Attorney General's Recommendations

Attorney General's Recommended Measures	Project Compliance	Percent Reduction[1]
Energy- and water-efficient buildings and landscaping through ordinances, development fees, incentives, project timing prioritization, and other implementing tools.	**Compliant.** Goal 1 Policies and Policy Actions of the Sustainability Element address energy conservation to reduce dependence on fossil fuels. These measures include maximizing energy efficiency and conservation, installation of renewable energy systems such as solar water heaters and photovoltaic systems, increased lighting efficiency, and introduction of energy efficiency educational programs. Goal 3 Policies and Policy Actions of the Community Facilities and Infrastructure Element promote green and sustainable practices relative to water use. These include providing water conservation education programs, use of greywater and reclaimed water, and revising planning and building codes to provide regulations for low flow fixtures and toilets and drought tolerant landscaping.	8
Waste diversion, recycling, water efficiency, energy efficiency and energy recovery in cooperation with public services districts and private entities.	**Compliant.** Sustainability Element Goal 2 Policies and Policy Actions include measures to achieve zero waste to landfills and incinerators. This would be achieved by source reduction programs, expansion of recycling programs, potential composting programs, and by achieving and exceeding the diversion requirements of AB 939 (50 percent waste diversion).	1
Urban and rural forestry through tree planting requirements and programs; preservation of agricultural land and resources that sequester carbon; heat island reduction programs.	**Compliant.** Goal 4 Policies and Policy Actions of the Sustainability Element include measures to increase the tree canopy in the City (including within parking areas) and to establish new parks and open space areas.	1
Regional cooperation to find cross-regional efficiencies in GHG reduction investments and to plan for regional transit, energy generation, and waste recovery facilities.	**Compliant.** Policy Actions 2.1.5, 2.1.6 of the Air Quality and Climate Change Element address coordination with neighboring jurisdictions and regional agencies to create an integrated bicycle route system and secure commuter-rail opportunities. Additionally, Policy 2.3 and Policy Action 2.3.1 would ensure cooperation with State, SCAG, and the Gateway Cities Council of Governments (COG) to achieve mandates imposed by AB 32, Executive Order S-3-05, and SB 375, as well as coordinate with Gateway Cities COG and participate in the development of their Sustainable Community Strategy.	Accounted for above
	Total Reduction Percentage:	**41**

Source: California Office of the Attorney General, *Sustainability and General Plans: Examples of Policies to Address Climate Change*, updated January 22, 2010.

Notes:
1. Emissions Reductions obtained from Appendix B of the *CEQA and Climate Change white paper*, prepared by CAPCOA (January 2008).

In addition to being compliant with many of the Attorney General's recommended design features, the proposed *General Plan Update* is also consistent with the California Environmental Protection Agency Climate Action Team proposed early action measures to mitigate climate change. These early action measures are designed to ensure that projects meet the Governor's climate reduction targets, and are documented in the *Climate Action Team Report to Governor Schwarzenegger at the Legislature*, March 2006. The early action measures are also included in the CARB Scoping Plan and are mandated under AB 32.

Consistency With the CARB Scoping Plan

A complete list of CARB Scoping Plan Measures/Recommended Actions needed to obtain AB 32 goals, as well as the Governor's Executive Order, are referenced in Table 5.5-10, *Recommended Actions for Climate Change Proposed Scoping Plan*. Of the 39 measures identified, those that would be considered to be applicable to the proposed *General Plan Update* would primarily be those actions related to electricity use, natural gas use, and water conservation. Consistency of the proposed *General Plan Update* with these measures is evaluated by each source-type measure below. Table 5.5-10 identifies which CARB Recommended Actions applies to the proposed *General Plan Update*, and of those, whether the proposed *General Plan Update* is consistent therewith.

Table 5.5-10
Recommended Actions for Climate Change Proposed Scoping Plan

ID #	Sector	Strategy Name	Applicable to Project?	Will Project Conflict With Implementation?
T-1	Transportation	Pavley I and II – Light-Duty Vehicle GHG Standards	No	No
T-2	Transportation	Low Carbon Fuel Standard (Discrete Early Action)	No	No
T-3	Transportation	Regional Transportation-Related GHG Targets	**Yes**	No
T-4	Transportation	Vehicle Efficiency Measures	No	No
T-5	Transportation	Ship Electrification at Ports (Discrete Early Action)	No	No
T-6	Transportation	Goods-movement Efficiency Measures	**Yes**	No
T-7	Transportation	Heavy Duty Vehicle Greenhouse Gas Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)	No	No
T-8	Transportation	Medium and Heavy-Duty Vehicle Hybridization	No	No
T-9	Transportation	High Speed Rail	No	No
E-1	Electricity and Natural Gas	Increased Utility Energy efficiency programs More stringent Building and Appliance Standards	**Yes**	No
E-2	Electricity and Natural Gas	Increase Combined Heat and Power Use by 30,000GWh	No	No
E-3	Electricity and Natural Gas	Renewable Portfolio Standard	No	No
E-4	Electricity and Natural Gas	Million Solar Roofs	**Yes**	No
CR-1	Electricity and Natural Gas	Energy Efficiency	**Yes**	No
CR-2	Electricity and Natural Gas	Solar Water Heating	**Yes**	No
GB-1	Green Buildings	Green Buildings	**Yes**	No
W-1	Water	Water Use Efficiency	**Yes**	No
W-2	Water	Water Recycling	**Yes**	No
W-3	Water	Water System Energy Efficiency	No	No
W-4	Water	Reuse Urban Runoff	No	No

Table 5.5-10 [continued]
Recommended Actions for Climate Change Proposed Scoping Plan

ID #	Sector	Strategy Name	Applicable to Project?	Will Project Conflict With Implementation?
W-5	Water	Increase Renewable Energy Production	No	No
W-6	Water	Public Goods Charge (Water)	No	No
I-1	Industry	Energy Efficiency and Co-benefits Audits for Large Industrial Sources	No	No
I-2	Industry	Oil and Gas Extraction GHG Emission Reduction	No	No
I-3	Industry	GHG Leak Reduction from Oil and Gas Transmission	No	No
I-4	Industry	Refinery Flare Recovery Process Improvements	No	No
I-5	Industry	Removal of Methane Exemption from Existing Refinery Regulations	No	No
RW-1	Recycling and Waste Management	Landfill Methane Control (Discrete Early Action)	No	No
RW-2	Recycling and Waste Management	Additional Reductions in Landfill Methane – Capture Improvements	No	No
RW-3	Recycling and Waste Management	High Recycling/Zero Waste	**Yes**	No
F-1	Forestry	Sustainable Forest Target	No	No
H-1	High Global Warming Potential Gases	Motor Vehicle Air Conditioning Systems (Discrete Early Action)	No	No
H-2	High Global Warming Potential Gases	SF_6 Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)	No	No
H-3	High Global Warming Potential Gases	Reduction in Perflourocarbons in Semiconductor Manufacturing (Discrete Early Action)	No	No
H-4	High Global Warming Potential Gases	Limit High GWP Use in Consumer Products (Discrete Early Action, Adopted June 2008)	No	No
H-5	High Global Warming Potential Gases	High GWP Reductions from Mobile Sources	No	No
H-6	High Global Warming Potential Gases	High GWP Reductions from Stationary Sources	No	No
H-7	High Global Warming Potential Gases	Mitigation Fee on High GWP Gases	No	No
A-1	Agriculture	Methane Capture at Large Dairies	No	No

Source: California Air Resources Board, *Assembly Bill 32 Scoping Plan*, 2008.

AB 32 requires California to reduce its GHG emissions by approximately 28.5 percent below business as usual. CARB identified reduction measures to achieve this goal as set forth in the CARB Scoping Plan. The proposed *General Plan Update* would facilitate development that would directly generate GHG emissions. Potential indirect GHG emissions could also be generated by incremental electricity consumption and waste generation. A detailed discussion of each applicable measure and if the proposed project conflicts with its implementation is provided below.

Transportation

Action T-3 is based on the requirements of SB 375 which establishes mechanisms for the development of regional targets for reducing passenger vehicle GHG emissions. Through the SB 375 process, regions will work to integrate development patterns and the transportation network in a way that achieves the reduction of GHG emission while meeting housing needs and other regional planning objectives. SB 375 requires CARB to develop, in consultation with SCAG, passenger vehicle GHG emissions reduction targets for 2020 and 2035 by September 30, 2010. As the City of Artesia is within the SCAG area, future development projects within the Plan area would be consistent with Action T-3.

Action T-6 refers to the improvement of efficiency in goods movement activities. T-6 mainly addresses ports, but also includes a discussion on trucks and related facilities. The *General Plan Update* provides measures to improve transit service and alternative transportation modes, and overall mobility within the City. The measures include coordination with regional agencies to increase commuter-rail and improve the overall regional circulation system. Additionally, the *General Plan Update* provides measures specifically focused on creating new, and improving existing pedestrian and bicycle connections throughout the City. The improvement of transportation facilities and mobility within the City would ensure efficient movement of goods and helps reduce vehicular trips. Therefore, the *General Plan Update* would be consistent with Recommended Action T-6.

Electricity and Natural Gas

Action E-1 aims to reduce electricity demand by increased efficiency of Utility Energy Programs and adoption of more stringent building and appliance standards. The Sustainability Element includes Goals, Policies, and Policy Actions addressing energy conservation to reduce dependence on fossil fuels. These measures include maximizing energy efficiency and conservation, installation of renewable energy systems such as solar water heaters and photovoltaic systems. Also, these measures address increased lighting efficiency, and the introduction of energy efficiency educational programs. As a result, it is anticipated that future development within the City would incorporate energy efficient features into future projects. Therefore, the proposed *General Plan Update* would help implement and would not conflict with Action E-1.

Action E-4 strives to promote solar generated electricity. Goal 1 Policies and Policy Actions of the Sustainability Element includes measures promoting the installation of photovoltaic systems on municipal properties. Therefore, the *General Plan Update* is consistent with and promotes the goal of Action E-4.

Action CR-2 aims to establish solar water heating systems in commercial and residential buildings. A solar water heating system offsets the use of natural gas by using the sun to heat water, typically reducing the need for conventional water heating by about two-thirds. Goal 1 Policies and Policy Actions of the Sustainability Element promotes the conservation of energy and the use of renewable energy sources including the use of solar water heaters. Therefore, the proposed *General Plan Update* would help implement and not conflict with Action CR-2.

Recommended Action CR-1 refers to energy efficiency. Key energy efficiency strategies would include codes and standards, existing buildings, improved utility programs, solar water heating, and combined heat and power, among others. As stated above, the *General Plan Update* includes measures promoting the utilization of solar water heaters and photovoltaic systems, as well as the use of energy efficient lighting. Therefore, the proposed project would not obstruct implementation of Action CR-1.

Green Buildings

Recommended Action GB-1 expands the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings. Sustainability Element Goal 3 Policies and Policy Actions encourage the development of a green building ordinance for the City. These measures include development of public education programs, adaptable reuse of buildings, and incentives for green building techniques. The *General Plan Update* also encourages tree planting throughout the City to reduce the heat island effect. Also, Goal 3 Policies and Policy Actions of the Community Facilities and Infrastructure Element promote green and sustainable practices relative to water use. Therefore, the proposed *General Plan Update* would not obstruct implementation of Action GB-1.

Water Use

Recommended Action W-1 pertains to implementation water use efficiency measures. Goal 3 Policies and Policy Actions of the Community Facilities and Infrastructure Element within the *General Plan Update* promote green and sustainable practices relative to water use. These include providing water conservation education programs, use of greywater and reclaimed water, and revising planning and building codes to provide regulations for low flow fixtures and toilets and drought tolerant landscaping. The proposed *General Plan Update* is consistent with and would not obstruct this Recommended Action.

Action W-2 water recycling is part of the water use efficiency measures intended to reduce water usage and energy consumption. As stated above, the Community Facilities and Infrastructure Element promotes sustainable practices related to water use, and encourages the use of greywater and reclaimed water. The proposed *General Plan Update* would not obstruct Recommended Action W-2.

Recycling and Waste Management

RW-3 relates to high recycling/zero waste and would apply to the proposed *General Plan Update*. Sustainability Element Goal 2 Policies and Policy Actions include measures to achieve zero waste to landfills and incinerators. This would be achieved by source reduction programs, expansion of recycling programs, potential composting programs, and by achieving and exceeding the diversion requirements of AB 939 (50 percent waste diversion). Therefore, future development within the City would also participate in waste diversion and recycling programs. The proposed *General Plan Update* would comply with Recommended Action RW-3.

Consistency With Applicable GHG Plans, Policies, or Regulations

The City does not currently have an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Therefore, the proposed *General Plan Update* would not conflict with an adopted plan, policy, or regulation pertaining to GHGs. Also, with reductions identified above, the proposed *General Plan Update* would result in a 41 percent reduction of GHG emissions from the "business as usual" scenario, which exceeds the reduction goals of AB 32. Therefore, the project would not hinder the State's GHG reduction goals established by AB 32. A less than significant impact would occur in this regard.

Conclusion

The proposed *General Plan Update* would facilitate the construction of residential, commercial, office, institutional, and light industrial uses within the City. As shown in Table 5.5-8, the proposed project would result 357,409.15 $MTCO_2eq$/year of operational-related emissions without reductions from reduction measures, required by Mitigation Measure AQ-2. To quantify GHG emissions reductions resulting from project operations, CAPCOA has identified the percent reduction associated with such GHG mitigation measures (found in Appendix B of CAPCOA's *CEQA and Climate Change White Paper*). With implementation of Mitigation Measure AQ-2, the *General Plan Update* would be required to incorporate sustainable practices which include water, energy, solid waste, and transportation efficiency measures that are summarized in Table 5.5-9. Based on the reduction measures in Table 5.5-9, the proposed *General Plan Update* would reduce its GHG emissions up to 41 percent below the "business as usual" scenario. Therefore, implementation of Mitigation Measure AQ-2 would reduce the project's operational GHG emissions to 210,871.40 $MTCO_2eq$/year. AB 32 requires the reduction of GHG emissions to 1990 levels, which would require a minimum 28.5 percent reduction in "business as usual" GHG emissions for the entire State. Therefore, the *General Plan Update* would be considered to be consistent with the reduction goals of AB 32.

The City's process for the future evaluation of discretionary projects within the City would include a consistency analysis with the Goals, Policies, and Policy Actions of the proposed *General Plan Update* and Mitigation Measure AQ-2. In general, with implementation of reduction features within Mitigation Measure AQ-2, future projects would have a less than significant impact with regards to GHG emissions. The measures may be updated, expanded, and refined when applied to specific future projects based on project specific design and changes in existing conditions, and local, State, and Federal laws.

The degree of future impacts and applicability, feasibility, and success of future mitigation measures cannot be adequately determined for each specific future project at this programmatic level of analysis. While some future projects would emit negligible amounts of GHGs, others may result in greater GHG emissions. However, at the program level of analysis, the *General Plan Update* would result in up to a 41 percent GHG emissions with implementation of Mitigation Measure AQ-2. The CARB Scoping Plan analysis above demonstrates "that projected … emissions will be equal to or less than 1990 emissions."[30] As stated above,

[30] California Air Pollution Control Officers Association, *CEQA and Climate Change*, January 2008.

reducing GHG emissions to 1990 levels would require a 28.5 percent reduction in "business as usual" GHG emissions for the entire State. As the proposed project would reduce its GHG emissions by up to 41 percent with implementation of Mitigation Measure AQ-2, it would be consistent with the goals established in AB 32. Therefore, a less than significant impact would occur in this regard.

Mitigation Measures:

AQ-2 The following is a list of potential design features that shall be incorporated, as determined feasible by the Community Development Director, into the *General Plan Update* and future projects to ensure consistency with adopted statewide plans and programs.

Energy Efficiency

- Incorporate green building practices and design elements.
- Meet recognized green building and energy efficiency benchmarks.
- Install energy efficient lighting (e.g., light emitting diodes (LEDs)), heating and cooling systems, appliances, equipment, and control systems
- Use passive solar design, e.g., orient buildings and incorporate landscaping to maximize passive solar heating during cool seasons, minimize solar heat gain during hot seasons, and enhance natural ventilation. Design buildings to take advantage of sunlight.
- Install efficient lighting, (including LEDs) for traffic, street and other outdoor lighting.
- Provide education on energy efficiency to residents, customers and/or tenants.

Renewable Energy and Energy Storage

- Meet "reach" goals for building energy efficiency and renewable energy use.
- Install solar, wind, and geothermal power systems and solar hot water heaters.
- Install solar panels on unused roof and ground space and over carports and parking areas.
- Include energy storage where appropriate to optimize renewable energy generation systems and avoid peak energy use.
- Use combined heat and power (CHP) in appropriate applications.

Water Conservation and Efficiency

- Incorporate water-reducing features into building and landscape design.
- Create water-efficient landscapes.
- Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls and use water-efficient irrigation methods.
- Make effective use of graywater. (Graywater is untreated household waste water from bathtubs, showers, bathroom wash basins, and water from clothes washing machines. Graywater to be used for landscape irrigation.)

- Implement low-impact development practices that maintain the existing hydrology of the site to manage storm water and protect the environment.
- Devise a comprehensive water conservation strategy appropriate for the project and location.
- Design buildings to be water-efficient. Install water-efficient fixtures and appliances.
- Provide education about water conservation and available programs and incentives.

Solid Waste Measures

- Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).
- Integrate reuse and recycling into residential industrial, institutional and commercial projects.
- Provide easy and convenient recycling opportunities for residents, the public, and tenant businesses.
- Provide education and publicity about reducing waste and available recycling services.

Land Use Measures

- Ensure consistency with "smart growth" principles – mixed-use, infill, and higher density projects that provide alternatives to individual vehicle travel and promote the efficient delivery of services and goods.
- Meet recognized "smart growth" benchmarks.
- Incorporate public transit into the project's design.
- Preserve and create open space and parks. Preserve existing trees, and plant replacement trees at a set ratio.
- Develop "brownfields" and other underused or defunct properties near existing public transportation and jobs.
- Include pedestrian and bicycle facilities within projects and ensure that existing non-motorized routes are maintained and enhanced.
- Meet an identified transportation-related benchmark.
- Adopt a comprehensive parking policy that discourages private vehicle use and encourages the use of alternative transportation.
- Promote "least polluting" ways to connect people and goods to their destinations.
- Incorporate bicycle lanes, routes and facilities into street systems, new subdivisions, and large developments.
- Require amenities for non-motorized transportation, such as secure and convenient bicycle parking.
- Connect parks and open space through shared pedestrian/bike paths and trails to encourage walking and bicycling.
- Create bicycle lanes and walking paths directed to the location of schools, parks and other destination points.

- Institute teleconferencing, telecommute and/or flexible work hour programs to reduce unnecessary employee transportation.
- Provide information on alternative transportation options for consumers, residents, tenants and employees to reduce transportation-related emissions.
- Purchase, or create incentives for purchasing, low or zero-emission vehicles.
- Create a ride sharing program. Promote existing ride sharing programs e.g., by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading for ride sharing vehicles, and providing a web site or message board for coordinating rides.
- Provide a vanpool for employees.
- Protect existing trees and encourage the planting of new trees. Adopt a tree protection and replacement ordinance

Level of Significance: Less Than Significant Impact.

5.5.6 CUMULATIVE IMPACTS

■ **REGIONAL AIR QUALITY EMISSIONS RESULTING FROM OPERATIONAL BUILDOUT OF THE PROPOSED GENERAL PLAN UPDATE COULD CUMULATIVELY IMPACT REGIONAL AIR QUALITY LEVELS.**

Impact Analysis: The SCAQMD 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 impacts. Instead, the SCAQMD 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 SCAQMD recommended daily thresholds for project-specific impacts would also cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is nonattainment.

Short-Term Construction Emissions

SCAQMD thresholds for criteria pollutants are established for individual development projects, and it is assumed that some of the projects that would be implemented under the *General Plan Update* could individually exceed the SCAQMD thresholds. Based on the program level construction analysis above, construction related emissions associated with future potential development projects in the project area may be "cumulatively considerable", even with implementation of the recommended mitigation measure and adherence to the *General Plan Update* Goals, Policies, and Policy Actions. Construction of future development and infrastructure projects under the *General Plan Update* would be required to comply with the applicable SCAQMD rules and regulations. These measures call for the maintenance of construction equipment, the use of non-polluting and non-toxic building equipment, and minimizing fugitive dust. Cumulative construction air quality impacts are significant and unavoidable.

Long-Term Operational Emissions

New development under the proposed *General Plan Update*, combined with other anticipated future development in the region would contribute to a cumulative annual increase in regional air pollutant emissions. Table 5.5-7 depicts the estimated mobile and stationary source emissions associated with the potential development in the *General Plan Update* area. As shown in Table 5.5-7, the emissions from future development within the City exceed the SCAQMD thresholds for ROG, NO_X, CO, and PM_{10}, resulting in a significant impact. In accordance with SCAQMD methodology, any project that cannot be mitigated to a level of less than significant is also significant on a cumulative basis. Therefore, the cumulative operational emissions associated with the proposed project are significant on a program level.

Greenhouse Gas Emissions

As stated above, the proposed *General Plan Update* would result in a less than significant impact regarding GHG emissions, as the project would be compliant with the goals of AB 32 with implementation of Mitigation Measure AQ-2. The *General Plan Update* would permit less development than that allowed under the current *General Plan*, and would in turn result in reduced GHG emissions. Also, Mitigation Measure AQ-2 would reduce the proposed project's GHG emissions to a level that is consistent with AB 32, and would not hinder the intent and statewide reduction goals of AB 32. Impacts in this regard would be less than significant.

Mitigation Measures: Refer to Mitigation Measures AQ-2 and AQ-3.

Level of Significance: Significant Unavoidable Impact.

5.5.7 SIGNIFICANT UNAVOIDABLE IMPACTS

Implementation of the proposed *General Plan Update* would result in a significant and unavoidable impact for the following areas:

- Construction-Related Emissions – As project-related emissions (associated with future development and infrastructure projects facilitated by the *General Plan Update*) are anticipated to exceed SCAQMD thresholds, construction-related emissions are considered significant and unavoidable.

- Regional Operational Emissions – During the operational phase, potential development within the City would result in a net increase in regional emissions of ROG, NO_X, SO_2, CO, PM_{10}, and $PM_{2.5}$ from the operation of both stationary and mobile sources. Adherence to standard SCAQMD regulations would reduce the potential air quality impacts to the degree technically feasible, but emissions would remain above SCAQMD significance thresholds. Therefore, operation of the proposed project would have a significant and unavoidable impact on regional air quality.

- Cumulative Construction and Operational Impacts – Emissions from development of the proposed project would exceed the SCAQMD thresholds for ROG, NO_X, CO, PM_{10}, and $PM_{2.5}$, resulting in a significant impact. In accordance with SCAQMD methodology, any project that cannot be mitigated to a level of less than significant is also significant on a cumulative basis.

5.5.8 SOURCES CITED

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