3.1 AIR QUALITY

"Air Pollution" is a general term that refers to one or more chemical substances that degrade the quality of the atmosphere. Individual air pollutants degrade the atmosphere, which in turn diminish human or animal health, reduce the productivity or vigor of crops or natural vegetation, and reduce visibility. Air pollution also has climate change implications, as discussed in Section 3.3. "Air Quality" is a term used to describe the amount of air pollution to which the public is exposed.

3.1.1 Regulatory Setting

Air quality in the United States (U.S.) is governed by the federal Clean Air Act (CAA), which is administered by the U.S. Environmental Protection Agency (USEPA). In addition to being subject to the requirements of the CAA, air quality in California is governed under the California Clean Air Act (CCAA).

The CCAA, as amended in 1992, requires all air districts in California to endeavor to achieve and maintain California Ambient Air Quality Standards (CAAQS). The California Air Resources Board (CARB) administers the CCAA statewide.

3.1.1.1 Federal and State

U.S. Environmental Protection Agency

The USEPA established the National Ambient Air Quality Standards (NAAQS), enforces the CAA, and regulates emission sources, such as aircraft, ships, and certain types of locomotives under the exclusive authority of the federal government. The USEPA also has jurisdiction over emission sources outside U.S. waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet emission standards established by CARB,[1] which are stricter than the federal standards.

California Air Resources Board

CARB, which is part of the California Environmental Protection Agency (Cal/EPA), is responsible for ensuring implementation of the CCAA, meeting state requirements of the CAA, and establishing CAAQS. In addition, CARB sets emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB also establishes passenger vehicle fuel specifications.[2]

CARB oversees the functions of local air pollution control and air quality management districts, which in turn administer air quality activities at the regional and county level. The CCAA is administered by CARB at the state level and by the air quality management districts at the regional level.

[1] Additional information about the USEPA can be found at www.epa.gov. Additional information about USEPA Region IX, which includes California, can be found at www.epa.gov/region9. Additional information on the activities of USEPA's Office of Mobile Sources can be found at www.epa.gov/omswww/mshome.htm.
[2] Additional information for Cal/EPA can be found at www.calepa.cahwet.gov and for CARB at www.arb.ca.gov.

Clean Air Act Amendments of 1990

The Clean Air Act Amendments of 1990 (CAAA) directs the USEPA to implement environmental policies and regulations that will ensure acceptable levels of air quality. Under the CAAA, a project cannot:

- Cause or contribute to any new violation of any NAAQS in any area
- Increase the frequency or severity of any existing violation of any NAAQS in any area
- Delay timely attainment of any NAAQS or any required interim emission reductions or other milestones in any area

3.1.1.2 National and State Ambient Air Quality Standards

As required by the CAA, NAAQS have been established for six major air pollutants: carbon monoxide, nitrogen dioxide, ozone, particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide, and lead. CAAQS standards are generally more stringent than NAAQS standards and incorporate additional sulfate, hydrogen sulfide, vinyl chloride, and visibility-reducing particles.

State and federal standards are summarized in Table 3.1-1. The federal "primary" standards were established to protect the public health.

3.1.1.3 Regional

South Coast Air Quality Management District

The South Coast Air Quality Management District (South Coast AQMD) was created to protect the public from the harmful effects of air pollution, achieve and maintain air quality standards, foster community involvement, and develop and implement cost-effective programs that meet state and federal mandates, while considering environmental and economic impacts.

The South Coast AQMD monitors air quality, and plans, implements and enforces programs designed to attain and maintain CAAQS and NAAQS in the district. These programs include air quality rules and regulations for stationary source emissions, including area sources and point sources, and certain mobile source emissions. The South Coast AQMD establishes permitting requirements for stationary sources and ensures that new, modified, or relocated stationary sources do not create net emissions increases and, therefore, are consistent with the region's air quality goals. The South Coast AQMD enforces air quality rules and regulations through inspections, educational or training programs, or fines, when necessary.

Regional Transportation Plan (RTP) ~~and Long Range Transportation Plan (LRTP)~~

A metropolitan planning organization (MPO) is the designated local decision-making body that is responsible for carrying out the metropolitan transportation planning process for an urban area. The Southern California Association of Governments (SCAG), as the federally designated MPO for most of Southern California, is required to adopt and periodically update ~~an LRTP and develop~~ an RTP and TIP for Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial Counties.

Table 3.1-1. Ambient Air Quality Standards, Sources, and Effects

Air Pollutant	State Standards	National Standards (Primary)	Sources	Health Effect
Ozone (O_3)	0.09 ppm, 1-hr. avg. 0.07 ppm, 8-hr. avg.	0.075 ppm, 8-hr. avg.	Atmospheric reaction of organic gases with nitrogen oxides in sunlight	Aggravation of respiratory and cardiovascular diseases, irritation of eyes, impairment of cardiopulmonary function, plant leaf injury
Respirable Particulate Matter (PM_{10})	50 $\mu g/m^3$, 24-hr. avg. 20 $\mu g/m^3$, AAM	150 $\mu g/m^3$, 24-hr. avg.	Stationary combustion of solid fuels, construction activities, industrial processes, industrial chemical reactions	Reduced lung function, aggravation of the effects of gaseous pollutants, aggravation of respiratory and cardio-respiratory diseases, increased coughing and chest discomfort, soiling, reduced visibility
Particulate Matter less than 2.5 Microns in Diameter (PM2.5)	No separate State standard	35 $\mu g/m^3$, 24-hr. avg	Combustion from mobile and stationary sources, atmospheric chemical reactions	Health problems, including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing, and premature deaths.
Carbon Monoxide (CO)	9.0 ppm, 8-hr. avg. 20 ppm, 1-hr. avg.	9 ppm, 8-hr. avg. 35 ppm, 1-hr. avg.	Incomplete combustion of fuels and other carbon-containing substances such as motor vehicle exhaust, natural events, such as decomposition of organic matter	Reduced tolerance for exercise, impairment of mental function, impairment of fetal development, death at high levels of exposure, aggravation of some heart diseases (angina)
Nitrogen Dioxide (NO_2)	0.18 ppm, 1-hr. avg.	100 ppb. 1-hr avg.	Motor vehicle exhaust, high-temperature stationary combustion, atmospheric reactions	Aggravation of respiratory illness, reduced visibility, reduced plant growth, formation of acid rain
Sulfur Dioxide (SO_2)	0.25 ppm 1-hr. avg. 0.04 ppm, 24-hr avg.	75 ppb. 1-hr avg.	Combustion of sulfur-containing fossil fuels, smelting of sulfur-bearing metal ores, industrial processes	Aggravation of respiratory diseases (asthma, emphysema), reduced lung function, irritation of eyes, reduced visibility, plant injury, deterioration of metals, textiles, leather, finishes, coating, etc.
Lead (Pb)	1.5 $\mu g/m^3$, 30 day avg.	1.5 $\mu g/m^3$, calendar quarter 0.15 $\mu g/m^3$, rolling 3-month average	Contaminated soil	Increased body burden, impairment of blood formation and nerve conduction
Visibility-Reducing Particles	Extinction coefficient of 0.23 per km, visibility of 10 miles or more due to particles when relative humidity is less than 70%.	No federal standards,		Visibility impairment on days when relative humidity is less than 70 percent

Sources: California Air Resources Board; SCAQMD Air Quality Handbook, 1993 as updated.
ppm = parts per million by volume; ppb = parts per billion by volume; $\mu g/m^3$ = micrograms per cubic meter; AAM = annual arithmetic mean

SCAG 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) presents the transportation vision for Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial Counties through the year 2035 and provides a long-term investment framework for addressing the region's transportation and related challenges.

Under the CAAA, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), and the Transportation Equity Act for the 21st Century (TEA-21), proposed transportation projects must be derived from an ~~LRTP or~~ RTP that conforms with State air quality plans as outlined in the State Implementation Plan (SIP). The SIP sets forth the State's strategies for achieving air quality standards. A proposed project must also be included in a Transportation Improvement Program (TIP) that conforms with the SIP, and localized impacts from a proposed project must conform to State air quality plans in non-attainment and maintenance areas.

3.1.2 Existing Conditions

3.1.2.1 Local Meteorology

The Study Area is located in the South Coast Air Basin (SCAB), which includes all of Los Angeles and Orange Counties, as well as portions of Riverside and San Bernardino Counties.

The SCAB is bordered by the Pacific Ocean to the west and the San Bernardino Mountains to the east. Prevailing winds in the basin are mainly out of the west. These prevailing winds are due to SCAB's proximity to the coast and the blocking nature of the San Bernardino Mountains to the east; air masses pushed onshore into the basin are often trapped by the San Bernardino Mountains.

During the summer, the SCAB is generally influenced by a Pacific Subtropical High cell that sits off the coast, which inhibits cloud formation and encourages daytime solar heating. The basin is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time they reach the basin. The SCAB is classified as a dry-hot desert climate.

3.1.2.2 Local Monitored Air Quality

The South Coast AQMD monitors air quality conditions at 37 locations throughout the SCAB. Data from the Glendora and Pomona monitoring stations were used to characterize existing conditions in the Study Area, and to establish a baseline for estimating future conditions both with and without the project Build Alternative. The most recent monitored data for these locations are summarized in Table 3.1-2 to illustrate the Study Area's general air quality trends.

Table 3.1-2. Air Quality Summary for Study Area Monitoring Stations

Air Pollutant	Standard/Exceedance**	840 Laurel, Glendora			924 North Garey Avenue, Pomona		
		2009	2010	2011	2009	2010	2011
Carbon Monoxide (CO)	Year Coverage*	90%	95%	98%	96%	99%	98%
	Max. 1-hour Concentration (ppm)	2.6	1.7	1.4	2.6	2.7	2.1
	Max. 8-hour Concentration (ppm)	2.13	1.21	1.11	2.21	1.80	1.72
	# Days>Federal 1-hour Std. of >35 ppm	0	0	0	0	0	0
	# Days>Federal 8-hour Std. of >9 ppm	0	0	0	0	0	0
	# Days>California 8-hour Std. of >9.0 ppm	0	0	0	0	0	0
Ozone (O_3)	Year Coverage*	97%	97%	89%	97%	79%	95%
	Max. 1-hour Concentration (ppm)	0.150	0.124	0.134	0.138	0.115	0.119
	Max. 8-hour Concentration (ppm)	0.118	0.100	0.111	0.100	0.082	0.096
	# Days>Federal 8-hour Std. Of >0.075 ppm	41	20	30	21	4	16
	# Days>California 1-hour Std. Of >0.09 ppm	45	25	35	25	9	15
	# Days>California 8-hour Std. Of >0.07 ppm	65	45	40	37	12	24
Nitrogen Dioxide (NO_2)	Year Coverage*	76%	95%	75%	97%	96%	98%
	Max. 1-hour Concentration (ppm)	0.086	0.079	0.078	0.102	0.097	0.087
	Annual Average (ppm)	***	0.015	0.013	0.027	0.026	0.025
	# Days>California 1-hour Std. of >0.18 ppm	0	0	0	0	0	0
Sulfur Dioxide (SO_2)	Year Coverage*	NM	NM	NM	NM	NM	NM
	Max. 24-hour Concentration (ppm)	NM	NM	NM	NM	NM	NM
	Annual Average (ppm)	NM	NM	NM	NM	NM	NM
	# Days>Federal 24-hour Std. of >0.14 ppm	NM	NM	NM	NM	NM	NM
Suspended Particulates (PM_{10})	Year Coverage*	0%	0%	0%	NM	NM	NM
	Max. 24-hour Concentration ($\mu g/m^3$)	93.8	68.9	80.5	NM	NM	NM
	#Days>Fed. 24-hour Std. of>150 $\mu g/m^3$	0	0	0	NM	NM	NM
	#Days>California 24-hour Std. of>50 $\mu g/m^3$	***	***	***	NM	NM	NM
	National Annual Average ($\mu g/m^3$)	23.0	26.1	29.3	NM	NM	NM
Suspended Particulates ($PM_{2.5}$)	Year Coverage*	40%	26%	33%	NM	NM	NM
	Max. 24-hour Concentration ($\mu g/m^3$)	72.0	44.4	94.6	NM	NM	NM
	State Annual Average ($\mu g/m^3$)	***	***	***	NM	NM	NM
	#Days>Fed. 24-hour Std. of>35 $\mu g/m^3$	6	1	2	NM	NM	NM
	National Annual Average ($\mu g/m^3$)	***	***	***	NM	NM	NM
Lead (Pb)	Maximum Monthly Concentration ($\mu g/m^3$)	NM	NM	NM	NM	NM	NM
	# Months Exceeding Federal Std.	NM	NM	NM	NM	NM	NM
	# Months Exceeding State Std.	NM	NM	NM	NM	NM	NM
Sulfates	Max. 24-hour Concentration ($\mu g/m^3$)	NM	NM	NM	NM	NM	NM
	#Samples>California 24-hr. Std.>=25 $\mu g/m^3$	NM	NM	NM	NM	NM	NM

Source: California Air Resources Board, 2012: http://www.arb.ca.gov/adam/
EPA AirData, 2012 (for 1-Hour CO only): http://www.epa.gov/airdata/
NM = not measured
*Year Coverage indicates how extensive monitoring was during the time of year when high pollutant concentrations were expected.
**The number of days above the standard is not necessarily the number of violations of the standard for the year.
*** Insufficient data to determine the value

3.1.2.3 Attainment Status

The USEPA publishes a list of all geographic areas in compliance with the NAAQS, and areas not in compliance with the NAAQS. Areas not in NAAQS compliance are deemed non-attainment areas. Areas that have insufficient data to make a determination are deemed unclassified and are treated as being attainment areas until proven otherwise. An area's designation is based on the data collected by the state monitoring network on a pollutant-by-pollutant basis.

The project area is located in Los Angeles and San Bernardino counties. As shown in Table 3.1-3, the USEPA classifies Los Angeles and San Bernardino counties as severe nonattainment areas for ozone, serious nonattainment areas for PM_{10}, and nonattainment areas for $PM_{2.5}$. Los Angeles and San Bernardino Counties are listed as maintenance areas for carbon monoxide because they were previously nonattainment areas for carbon monoxide. The air quality analysis focuses on these criteria pollutants.

Table 3.1-3. Project Area Attainment Status

Pollutant	Los Angeles County	San Bernardino County
Ozone (O_3)	Nonattainment (Severe)	Nonattainment (Severe)
Nitrogen Dioxide (NO_2)	Attainment	Attainment
Carbon Monoxide (CO)	Attainment/Maintenance	Attainment/Maintenance
Particulate Matter (PM_{10})	Nonattainment (Serious)	Nonattainment (Serious)
Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment

Source: USEPA, 2011

3.1.2.4 Regional Transportation Plan (RTP) ~~and Long Range Transportation Plan (LRTP)~~

The Build Alternative project is included in the SCAG's 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and was included in the regional emissions analysis conducted by SCAG for the 2008 RTP as project ID #1TR0704, "Metro Rail Gold Line Extension—Segment 2 Azusa-Citrus to Montclair Station LRT Extension". The project's design concept and scope have not changed significantly from what was considered in that regional emissions analysis. That analysis found that the RTP and, therefore, the individual projects contained in the plan, are conforming projects, and would have air quality impacts consistent with those identified in the SIPs for achieving the NAAQS.

3.1.3 Environmental Impacts

3.1.3.1 Evaluation Methodology

The evaluation of potential impacts includes a (1) regional emissions analysis that determines a project's overall impact on air quality; (2) carbon monoxide (CO) hot spot assessment; (3) particulate matter (PM_{10} and $PM_{2.5}$) hot spots analysis, and (4) mobile source air toxics analysis. The methodology for each impact analysis is discussed below.

Regional Emissions Analysis

The regional emissions analysis determines a project's overall impact on air quality and this analysis was conducted both for the Study Area and for the entire region. The "region" is the four-county region of Los Angeles, Orange, San Bernardino, and Riverside Counties; the "Study Area" is located within the region, in the San Gabriel Valley area of eastern Los Angeles County and western San Bernardino County.

The regional emissions analysis was conducted for the No Build, TSM, and Build Alternatives for the year 2035. The analysis was based on estimates of regional vehicle miles traveled (VMT) and vehicle hours traveled (VHT). Emission factors were obtained from CARB's emission factor program that uses parameters set within the program for Los Angeles County.

Carbon Monoxide Hot Spot Assessment

Carbon monoxide (CO) microscale air quality modeling was performed using the CARB's mobile source emission factor model and EPA's air quality dispersion model to estimate existing and future year 2035 No Build, TSM, and Build Alternative CO levels at selected locations in the Study Area, and maximum one-hour and eight-hour CO levels were predicted at receptor sites along the project alignment.

Within the Study Area, 90 intersections were screened based on changes in intersection volume, delay and level of service (LOS) between the No Build, TSM, and Build Alternatives. Sites were also selected based on the location of proposed parking facilities associated with the Build Alternative. Ten modeling sites were selected for detailed analysis. CO concentrations were predicted at these locations for the existing and design year (2035) for the project.

Particulate Matter (PM10 and PM2.5)

The Study Area is classified as a nonattainment area for PM_{10} and $PM_{2.5}$. As a result, a PM_{10} and $PM_{2.5}$ qualitative hotspot analysis was conducted, following EPA's March 29, 2006, guidance *Transportation Conformity Guidance for Qualitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (EPA420-B-06-902) as recommended in EPA's Final Rule regarding the localized or "hot-spot" analysis of $PM_{2.5}$ and PM_{10} (40 CFR Part 93—issued on March 10, 2006).

Mobile Source Air Toxics

The USEPA is the lead federal agency for administering the CAA and has certain responsibilities regarding the health effects of Mobile Source Air Toxics (MSATs). Under authority in Section 202 of the CAA, the USEPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources (66 *Federal Register* 17229, March 29, 2001). In this rule, USEPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline program, its national low emission vehicle standards, motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy-duty engine and vehicle standards and on-highway diesel fuel requirements. Future emissions likely would be lower than present levels as result of the USEPA's national control programs that are projected to reduce MSAT emissions by 72 percent from 1999 to 2050, even if VMT increases by 145 percent, as shown in Figure 3.1-1. For each detailed study alternative in this analysis, the amount of MSATs emitted would be proportional to the VMT, assuming that other variables, such as fleet mix, are the same for each detailed alternative.

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, among alternatives. The qualitative assessment conducted for the project is derived in part from a study conducted by the FHWA: *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*, found at: www.fhwa.dot.gov/environment/airtoxic/msatcompare /msatemissions.htm.

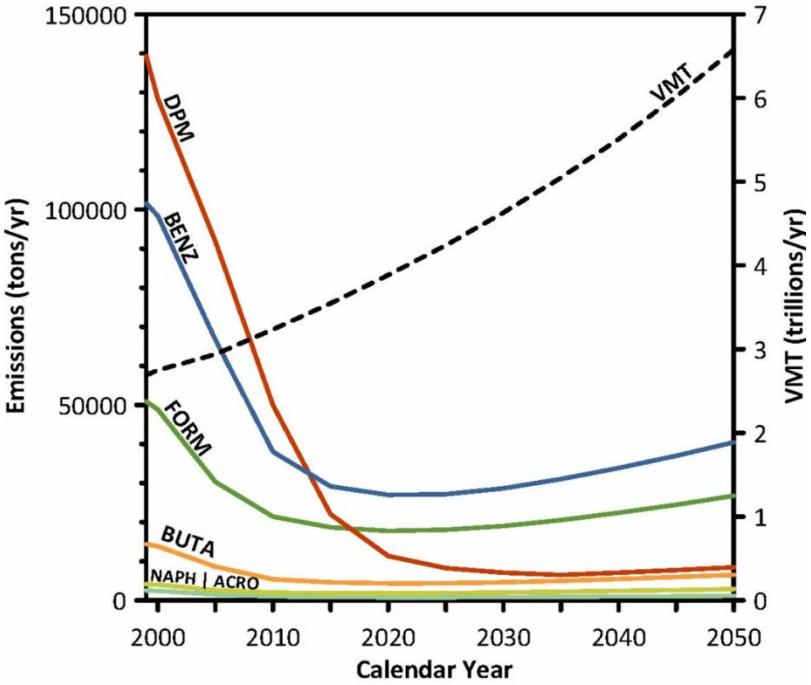

Figure 3.1-1. National MSAT Emission Trends 1999–2050 for Vehicles Operating on Roadways Using USEPA's MOBILE6.2 Model

3.1.3.2 Impact Criteria

Air quality impacts are considered significant if the project would:

- Conflict with or obstructs implementation of the applicable air quality plan
- Violate any air quality standard or contributes substantially to an existing or projected air quality violation
- Result in 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 release emissions that exceed quantitative thresholds for ozone precursors)
- Expose sensitive receptors (i.e., health care facilities, rehabilitation centers, retirement homes, residences, schools, playgrounds, child care centers, playgrounds) to substantial pollutant concentrations including air toxics such as diesel particulates
- Create objectionable odors affecting a substantial number of people

The SCAQMD daily air pollutant emissions threshold amounts are presented in Table 3.1-4. If the project's operation or construction emissions exceed the applicable threshold, then the impact can be considered to be significant.

Table 3.1-4. SCAQMD Air Quality Significance Thresholds

Pollutant	Construction	Operation
Mass Daily Thresholds		
Nitrogen Oxides (NO_x)	100 lbs/day	55 lbs/day
Volatile Organic Compounds (VOC)	75 lbs/day	55 lbs/day
Respirable Particulate Matter (PM_{10})	150 lbs/day	150 lbs/day
Fine Particulate Matter ($PM_{2.5}$)	55 lbs/day	55 lbs/day
Sulfur Oxides (SO_x)	150 lbs/day	150 lbs/day
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day
Lead (Pb)	3 lbs/day	3 lbs/day
Carbon Dioxide equivalents (CO_2**)	Being developed at this time	Being developed at this time
Toxic Air Contaminants (TACs) and Odor Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants*		
NO_2 1-hour average; annual average	SCAB is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state); 0.03 ppm (state)	
PM_{10} 24-hour average; annual average	10.4 µg/m (construction)** & 2.5 µg/m (operation) 1.0 $\mu g/m^3$	
$PM_{2.5}$ 24-hour average	10.4 $\mu g/m^3$ (construction)** & 2.5 $\mu g/m^3$ (operation)	
Sulfate 24-hour average	1 $\mu g/m^3$	
CO 1-hour average; 8-hour average	SCAB is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state); 9.0 ppm (state/federal)	

Source: SCAQMD CEQA Handbook (SCAQMD, Rev. March 2009).
*Ambient air quality thresholds for criteria pollutants are based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.
**Ambient air quality threshold based on SCAQMD Rule 403.
KEY
lbs/day = pounds per day
ppm = parts per million
$\mu g/m^3$ = microgram per cubic meter
≥ = greater than or equal to

3.1.3.3 Short-Term Construction Impacts

No Build Alternative

The No Build Alternative would not involve construction. Therefore, no impacts are expected.

Transportation Systems Management Alternative

The TSM Alternative would not involve construction. Therefore, no impacts are expected.

Build Alternative

Construction of the Build Alternative project would generate air pollutant emissions from the following activities:

- Demolition and grading (i.e., leveling terrain)
- Operations of construction equipment
- Vehicle travel by construction workers traveling to and from construction areas
- Vehicle travel associated with hauling of construction supplies to and debris from construction sites
- Periodic vehicle idling during on-site construction

The following construction activities are based on construction estimates derived for the Crenshaw/LAX LRT extension project because it represents a "worst case scenario" for the proposed Azusa to Montclair LRT extension project. The Crenshaw/LAX LRT extension project is a similar LRT extension designed for mostly at-grade operation within an existing railroad corridor that will be constructed using similar methods and procedures. While the construction activity of the Build Alternative project is expected to be less intensive, given the absence of construction activity associated with trenching or tunneling, these estimates are representative of a "worst case" peak construction day scenario for the project and include:

- Up to 20 pieces of heavy-duty equipment per day
- Up to 200 heavy-duty truck roundtrips per day

These construction activities would occur within and along the right-of-way, where the freight and Metrolink tracks would be relocated and the LRT tracks placed. Construction activity would also occur outside the right-of-way where parking structures would be built. In addition, some activity would occur on two 1- to 1.5-acre sites that would be needed for construction staging (vehicle and materials storage). It is anticipated that these sites would be in the general vicinity of Lone Hill Avenue in Glendora and Towne Avenue in Pomona, where "flyover" structures are proposed.

Table 3.1-5 shows construction emissions, calculated as maximum regional construction emissions, associated with the Crenshaw/LAX Transit Corridor Project which present a "worst case" scenario for construction impacts of the Azusa to Montclair extension project.

Table 3.1-5. Potential Maximum Construction Emissions

Scenario	Pounds Per Day					
	VOC	NO_x	CO	SO_x	$PM_{2.5}$	PM_{10}
Maximum Regional Emissions	31	267	147	<1	18	29
Regional Significance Threshold	75	100	550	150	55	150
Exceed Threshold?	No	**Yes**	No	No	No	No
Maximum Localized Emissions	21	191	90	<1	14	25
Localized Significance Threshold	—[1]	91	664	—[1]	3	5
Exceed Threshold?	—[1]	**Yes**	No	—[1]	**Yes**	**Yes**

Source: *Crenshaw/LAX Transit Corridor Final EIS/EIR*, August 2011
1. SCAQMD has not developed localized significance thresholds for VOC or SO_x.

While the construction-related emissions for the Build Alternative are expected to be less than those of the Crenshaw/LAX Transit Corridor project, the peak day emissions from construction could exceed the SCAQMDs daily threshold amounts for NOx, and localized significance threshold amounts for NOx, PM_{10}, and $PM_{2.5}$. Partial and temporary grade crossing and intersection closures during construction activity would also reduce traffic speeds and thus, result in increased emissions at major points of delay. Therefore, these impacts are considered significant.

3.1.3.4 Long-Term Impacts

No Build Alternative

Regional Emissions Analysis

The results of the analysis for the Study Area are shown in Table 3.1-6, and the results for the region are shown in Table 3.1-7. As shown in these tables, the No Build Alternative is predicted to have slightly higher regional pollutant burden levels in both the Study Area and the region than the TSM or Build Alternatives.

Carbon Monoxide Hot Spot Assessment

Maximum one-hour and eight-hour CO levels were predicted at receptor sites within the Study Area. Maximum one-hour CO concentrations are shown in Table 3.1-8. Maximum eight-hour CO concentrations are shown in Table 3.1-9.

As shown, no violations of the NAAQS are predicted under the No Build Alternative.

Particulate Matter (PM10 and PM2.5)

The No Build Alternative will not increase diesel traffic within the Study Area and will therefore not cause impacts with regards to particulate matter.

Mobile Source Air Toxics

Table 3.1-6 and Table 3.1-7 show the 2035 estimated total VMT for the Build and TSM Alternatives, as well as for the No Build Alternative.

The No Build Alternative would not affect VMT. As such, it will not cause any impacts with regards to MSATs. Also, for all alternatives, emissions in 2035 likely would be lower than present levels as a result of USEPA's national control programs, which are projected to reduce annual MSAT emissions by 72 percent between 1999 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the USEPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the Study Area likely would be lower in the future in nearly all cases.

Table 3.1-6. 2035 Study Area Emission Burden Assessment

Alternative	VMT		CO			TOG			NOx			PM10			PM2.5		
	Daily Vehicle Miles Traveled	Percent change from No Build	CO Emission Burden (Kg/day)	Change from No Build (Kg/day)	Percent change from No Build	Emission Burden (Kg/day)	Change from No Build (Kg/day)	Percent change from No Build	Emission Burden (Kg/day)	Change from No Build (Kg/day)	Percent change from No Build	Emission Burden (Kg/day)	Change from No Build (Kg/day)	Percent change from No Build	Emission Burden (Kg/day)	Change from No Build (Kg/day)	Percent change from No Build
No Build	29,073,888		27,485.6		—	6,080.1		—	1,560.8		—	1,405.6	—		964.3	—	
TSM	29,051,272	-0.1	27,366.3	-119.2	-0.4	6,057.9	-22.2	-0.4	1,549.1	-11.7	-0.1	1,401.0	-4.6	-0.3	953.0	-11.2	-1.2
Build	28,962,638	-0.4	27,042.4	-443.2	-1.6	5,988.7	-91.4	-1.5	1,510.9	-49.9	-0.4	1,380.4	-25.2	-1.8	947.5	-16.7	-1.7
SCAQMD Significance Threshold			249 Kg CO/day (550 lbs CO/day)			24.9 Kg NOx/day (55 lbs NOx/day)			24.9 kg VOC/day (55 lbs VOC/day)			68 Kg PM_{10}/day (150 lbs PM_{10}/day)			24.9 Kg $PM_{2.5}$/day (55 lbs $PM_{2.5}$/day)		

Source: Parsons Brinckerhoff, 2011

Table 3.1-7. 2035 Regional Emission Burden Assessment

Alternative	VMT		CO			TOG			NOx			PM10			PM10		
	Daily Vehicle Miles Traveled	Percent change from No Build	CO Emission Burden (Kg/day)	Change from No Build (Kg/day)	Percent change from No Build	Emission Burden (Kg/day)	Change from No Build (Kg/day)	Percent change from No Build	Emission Burden (Kg/day)	Change from No Build (Kg/day)	Percent change from No Build	Emission Burden (Kg/day)	Change from No Build (Kg/day)	Percent change from No Build	Emission Burden (Kg/day)	Change from No Build (Kg/day)	Percent change from No Build
No Build	533,525,766		613,610.0		—	140,464.7		—	49,129.5		—	35,593.7	—		26,585.4	—	
TSM	533,144,718	-0.1	613,155.3	-454.8	-0.1	140,359.8	-104.9	-0.1	49,091.1	-38.5	-0.1	35,566.8	-27.0	-0.1	26,565.0	-20.4	-0.1
Build	532,835,584	-0.1	612,738.7	-871.3	-0.1	140,265.7	-199.0	-0.1	49,054.2	-75.3	-0.2	35,543.3	-50.4	-0.1	26,543.0	-42.4	-0.2
SCAQMD Significance Threshold			249 Kg CO/day (550 lbs CO/day)			24.9 Kg NOx/day (55 lbs NOx/day)			24.9 kg VOC/day (55 lbs VOC/day)			68 Kg PM_{10}/day (150 lbs PM_{10}/day)			24.9 Kg $PM_{2.5}$/day (55 lbs $PM_{2.5}$/day)		

Source: Parsons Brinckerhoff, 2011

Table 3.1-8. 2035 Predicted One-hour CO Concentrations (ppm)

No.	Site Description	Existing		No Build		TSM		Build	
		AM	PM	AM	PM	AM	PM	AM	PM
1	Arrow Highway and San Dimas Avenue	2.9	3.3	2.7	2.6	2.7	2.6	2.6	2.7
2	Second Street and White Avenue	2.6	2.7	2.4	2.4	2.4	2.4	2.4	2.4
3	Arrow Highway and White Avenue	3.0	3.1	2.5	2.5	2.5	2.5	2.5	2.5
4	Arrow Highway and Garey Avenue	3.0	3.0	2.5	2.5	2.5	2.5	2.5	2.5
5	Arrow Highway and North Towne Avenue	3.2	3.2	2.6	2.5	2.6	2.5	2.6	2.5
6	First Street and College Avenue	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.8
7	Richton Street and Central Avenue	2.7	2.9	2.5	2.5	2.5	2.5	2.5	2.5
8	Arrow Highway and La Verne Avenue	2.5	2.6	2.4	2.4	2.4	2.4	2.4	2.4
9	Route 66 and Glenwood Avenue	2.8	2.8	2.5	2.5	2.5	2.5	2.5	2.5
10	Arrow Highway and Wheeler Avenue	2.9	3.0	2.5	2.5	2.5	2.5	2.6	2.6

Source: Parsons Brinckerhoff, 2011
Concentrations include one-hour CO background = 2.4 ppm
One-hour NAAQS = 35 ppm
SAAQS = 20 ppm

Table 3.1-9. 2035 Predicted Eight-hour CO Concentrations (ppm)

No.	Site Description	Existing	No Build	TSM	Build
1	Arrow Highway and San Dimas Avenue	2.33	1.91	1.91	1.91
2	Second Street and White Avenue	1.91	1.70	1.70	1.70
3	Arrow Highway and White Avenue	2.19	1.77	1.77	1.77
4	Arrow Highway and Garey Avenue	2.12	1.77	1.77	1.77
5	Arrow Highway and North Towne Avenue	2.26	1.84	1.84	1.84
6	First Street and College Avenue	1.70	1.70	1.70	1.98
7	Richton Street and Central Avenue	2.05	1.77	1.77	1.77
8	Arrow Highway and La Verne Avenue	1.84	1.70	1.70	1.70
9	Route 66 and Glenwood Avenue	1.98	1.77	1.77	1.77
10	Arrow Highway and Wheeler Avenue	2.12	1.77	1.77	1.84

Source: Parsons Brinckerhoff, 2011
Concentrations include eight-hour CO background = 1.7 ppm
Eight-hour NAAQS = 9 ppm
SAAQS = 9.0 ppm

Transportation Systems Management (TSM) Alternative

Regional Emissions Analysis

The results of the analysis for the Study Area are shown in Table 3.1-6, and the results for the region are shown in Table 3.1-7. As shown in these tables, the TSM Alternative is predicted to have slightly lower regional pollutant burden levels in both the Study Area and region than the No Build Alternative; the TSM Alternative is predicted to have slightly higher regional pollutant burden levels in both the Study Area and region than the Build Alternative. These impacts are below the regional significance thresholds developed by the South Coast AQMD.

Carbon Monoxide Hot Spot Assessment

Maximum predicted one-hour CO concentrations are shown in Table 3.1-8. Maximum eight-hour CO concentrations are shown in Table 3.1-9.

No violations of the NAAQS are predicted under the TSM Alternative.

Particulate Matter (PM10 and PM2.5)

The TSM Alternative will not increase diesel traffic within the Study Area, as it involves a rapid bus system with buses powered by compressed natural gas (CNG), and will therefore not cause impacts with regards to particulate matter.

Mobile Source Air Toxics

As shown in Table 3.1-6 and Table 3.1-7, the VMT estimated for the TSM Alternative is lower than that for the No Build Alternative, on both the Study Area and regional level.

Along with the reduction in VMT, the TSM Alternative is predicted to show a very slight improvement in overall network speed in the Study Area, compared to the No Build Alternative. According to USEPA's MOBILE6.2 emissions model, emissions of all priority MSATs, except for diesel particulate matter, decrease as speed increases. However, the extent to which these speed-related emissions decreases affect overall MSATs levels cannot be reliably projected because of the inherent deficiencies of technical models.

Based upon these results, the TSM Alternative is predicted to reduce MSATs in the overall Study Area compared to the No Build Alternative. Also, for all alternatives, emissions likely would be lower in 2035 than the present levels as a result of USEPA's national control programs, which are projected to reduce annual MSAT emissions by 72 percent between 1999 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the USEPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the Study Area likely would be lower in the future for all alternatives.

Build Alternative

Regional Emissions Analysis

As shown in Table 3.1-6 and Table 3.1-7, the Build Alternative project is predicted to slightly lower all regional pollutant burden levels in both the Study Area and region. These impacts are below the regional significance thresholds developed by the South Coast AQMD. While both the TSM and Build

Alternatives are predicted to slightly reduce overall emission burden levels, the Build Alternative is estimated to reduce emissions the most within the Study Area and the region.

Carbon Monoxide Hot Spot Assessment

Maximum one-hour and eight-hour CO levels were predicted at receptor sites along the project. Maximum one-hour CO concentrations are shown in Table 3.1-8. Maximum eight-hour CO concentrations are shown in Table 3.1-9. As show, the existing conditions have the highest predicted one-hour and eight-hour CO concentrations, with Site 1 (Arrow Highway and San Dimas Avenue) having the highest concentrations of 3.3 ppm (one-hour) and 2.33 ppm (eight-hour).

The Build Alternative CO concentrations are the same as the No Build and TSM Alternatives at seven of the ten modeling locations for one-hour concentrations, and at eight of the ten modeling locations for eight-hour concentrations. The one-hour Build Alternative concentrations at Site 1 (Arrow Highway and San Dimas Avenue) slightly decrease in the AM peak period and slightly increase in the PM peak period, as compared to the No Build and TSM Alternatives.

The one-hour and eight-hour Build Alternative concentrations slightly increase at Site 6 (First Street and College Avenue) and Site 10 (Arrow Highway and Wheeler Avenue), as compared to the No Build and TSM Alternatives. The concentration increases at Site 6 are due to the degradation in LOS and increases in delay and volumes under Build Conditions, as this intersection is located in close proximity to the Claremont Station park-and-ride. The concentration increases at Site 10 are due to the degradation in LOS and increases in delay under Build Conditions.

No violations of the NAAQS are predicted under Build Alternative.

Particulate Matter (PM10 and PM2.5)

The trains utilized in the Build Alternative will be electrically powered. Buses that service the train stations will be powered by compressed natural gas. As such, the project is not anticipated to increase diesel traffic within the Study Area.

Mobile Source Air Toxics

As shown in Table 3.1-6 and Table 3.1-7, the Build Alternative is predicted to demonstrate greater VMT reduction, than the No Build and TSM Alternatives, on both the Study Area and regional levels.

According to the traffic analysis, along with the reduction in VMT, the Build Alternative is predicted to show a very slight improvement in overall network speed in the Study Area, compared to the No Build Alternative. According to USEPA's MOBILE6.2 emissions model, emissions of all priority MSATs, except for diesel particulate matter, decrease as speed increases. Based upon these results, the Build Alternative is predicted to reduce MSATs in the overall Study Area compared to the No Build Alternative. Also, for all alternatives, emissions likely would be lower in 2035 than the present levels as a result of USEPA's national control programs, which are projected to reduce annual MSAT emissions by 72 percent between 1999 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the USEPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the Study Area likely would be lower in the future in nearly all cases.

Localized impacts of MSATs would be limited to areas where additional traffic may be generated. These locations would generally be around station sites where increased bus and commuter traffic would be

generated. Based on the traffic analysis, the highest volume intersection in the Study Area is the intersection of Arrow Highway and North Towne Avenue (Site 5), with an overall peak volume of approximately 4,300 vehicles. This intersection, which operates at LOS D in both peak periods under the No Build Alternative, will experience an increase of less than 100 vehicles under the Build Alternative.

Also, the traffic is not expected to move closer to any sensitive land uses in these areas. Effects of the increased traffic will be mitigated by a decrease of duplicate bus service, as well as the use of CNG buses, which generally emit less MSAT than traditional diesel buses. Ambient concentrations of MSATs could be higher at some locations than they would be with the No Build Alternative. Future MSAT emissions could be lower, however, where there are increases in localized speeds and reductions in congestion (which are associated with lower MSAT emissions). In addition, MSAT emissions would be lower in other locations with traffic shifts away from those locations,

In summary, for the project in the design year 2035, it is expected that there would be reduced MSAT emissions in both the Study Area and on a regional basis as a result of the reduced VMT associated with the use of mass transit and USEPA's MSAT reduction programs. On a regional basis, USEPA's vehicle and fuel regulations, coupled with fleet turnover, will, over time, result in substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than they are today. The new USEPA standards are estimated to reduce total emissions of MSATs by 330,000 tons in 2030, including 61,000 tons of benzene. Total emissions of VOCs will be reduced by over 1 .1 million tons in 2030 as a result of adopting these standards.

The Build Alternative project is not predicted to cause or exacerbate a violation of the applicable ambient air quality standards. The project is also consistent with growth assumptions and objectives of the regional Air Quality Management Plan (AQMP) as it is included in regional growth assumptions of the SCAG 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Overall, the Build Alternative project is predicted to reduce regional emission burden levels resulting in a beneficial effect. Thus, the project would contribute to the implementation of the regional AQMP and to the region's ability to comply with federal and state air quality standards. No adverse impact would result.

As the project's LRT trains will be electrically powered, the project operations would not create objectionable odors affecting substantial number of people.

3.1.4 Cumulative Impacts

The Gold Line Foothill Extension project is expected not to contribute to cumulative air quality impacts because the regional pollutant burdens would decrease with the project, and the project may reduce cumulative impacts by reducing regional VMT.

During construction, the project may contribute to regional cumulative air quality impacts when added to other transportation projects and improvements within the entire SCAG region that may be under construction during the same time period.

3.1.5 Mitigation Measures

3.1.5.1 Short-Term Construction Mitigation Measures

A range of mitigation measures to reduce construction-related emissions identified for similar LRT projects in the SCAQMD area and in Metro's Green Construction Policy will be used, and includes the following:

- **CON~~AQ~~-1**—Water or a stabilizing agent shall be applied to exposed surfaces in sufficient quantity to prevent generation of dust plumes.
- **CON~~AQ~~-2**—Track-out shall not extend 25 feet or more from an active operation and track-out shall be removed at the conclusion of each workday.
- **CON~~AQ~~-3**—Contractors shall be required to utilize at least one of the measures set forth in South Coast Air Quality Management District Rule 403 section (d)(5) to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site.
- **CON~~AQ~~-4**—All haul trucks hauling soil, sand, and other loose materials shall maintain at least six (6) inches of freeboard in accordance with California Vehicle Code Section 23114.
- **CON~~AQ~~-5**—All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
- **CON~~AQ~~-6**—Traffic speeds on unpaved roads shall be limited to 15 mph. Operations on unpaved surfaces shall be suspended when winds exceed 25 mph.
- **CON~~AQ~~-7**—Heavy equipment operations shall be suspended during first and second stage smog alerts.
- **CON~~AQ~~-8**—On-site stockpiles of debris or rusty materials shall be covered at all times when not being used. On-site stockpiles of dirt shall be watered at least two times per day or covered at all times when not being used.
- **CON~~AQ~~-9**—Contractors shall maintain equipment and vehicle engines in good condition and in proper tune per manufacturers' specifications.
- **CON~~AQ~~-10**—Heavy-duty trucks shall be prohibited from idling in excess of five minutes, both on- and off-site.
- **CON~~AQ~~-11**—Construction parking shall be configured to minimize traffic interference.
- **CON~~AQ~~-12**—Construction activity that affects traffic flow on the arterial system shall be limited to off-peak hours.
- **CON~~AQ~~-13**—Construction staging and vehicle parking, including workers' vehicles, shall be prohibited on streets adjacent to sensitive receptors such as schools, daycare centers, senior facilities, and hospitals.
- **CON~~AQ~~-14**—Portable generators shall be low-emitting and use ultra low sulfur diesel (<15 parts per million) or gasoline.
- **CON~~AQ~~-15**—Construction equipment shall use a combination of low sulfur diesel (<15 parts per million) and exhaust emission controls.
- **CON~~AQ~~-16**—The construction process shall use equipment having the minimum practical engine size (i.e., lowest appropriate horsepower rating for the intended job).

- **CON~~AQ~~-17**— Contractors shall be prohibited from tampering with construction equipment to increase horsepower or defeat emission control devices.
- **CON~~AQ~~-18**—The Construction Authority shall designate a person to ensure the implementation of air quality mitigation measures through direct inspections, records reviews, and complaint investigations.
- **CON-19—**LED lighting shall be used for construction activities taking place at night, to the extent feasible.

3.1.5.2 Long-Term Mitigation Measures

Since the regional pollutant burdens would decrease with the Build Alternative, there would be no adverse long-term air quality impact and no mitigation is required.

3.1.6 Level of Impact After Mitigation

During construction, Mitigation Measures CON-1 through CON-8 would reduce fugitive dust emissions, and Mitigation Measures CON-9 through CON-~~18~~ 19 would reduce exhaust emissions, including NO_X, $PM_{2.5}$, and $PM_{10.}$ Generally, SCAQMD dust control measures aim to reduce fugitive dust by approximately 60 percent and measures CON-1 through CON-~~18~~ 19 would further reduce the temporary effects of construction on air quality. However, even with these reductions, the peak day emissions of NOx pollutants may exceed the South Coast AQMD daily threshold amounts and emissions of $PM_{2.5}$ and PM_{10} may exceed localized thresholds. Therefore, these impacts are considered to be significant.

Regional pollutant burdens would decrease with the Build Alternative project, as compared to No Build Alternative, and would therefore not exceed South Coast AQMD significance thresholds. The CO microscale analysis demonstrates that there would be no violations of NAAQS under Build Alternative project. Furthermore, the project is not expected to cause particulate matter impacts because LRT trains will be electrically powered. As the Build Alternative project would decrease VMT, as compared to No Build Alternative, there would be no impacts associated with MSATs. Therefore, no adverse long-term air quality impacts are expected with the operational phase of the project.