Section 4.1

Air Quality

4.1.1 Introduction

The air quality analysis addresses criteria pollutant emissions from operational activities (project-related mobile sources and off-site regional traffic) that would occur at build out in the horizon year of 2035. As described in the introduction to Chapter 4, the analysis of project-related emissions includes a comparison of Future with Project (2035) conditions to the air pollutant emissions associated with baseline (2014) conditions; a comparison to Future without Project (2035) conditions is provided for additional information. Impacts from toxic air contaminants (TACs) and odors are also addressed.

This section presents an overview of air quality regulations, identifies existing conditions pertaining to air quality, describes the methodology used in the analysis, and evaluates the construction and operational air quality impacts associated with the Coastal Transportation Corridor Specific Plan (CTCSP) and West Los Angeles Transportation Improvement and Mitigation Specific Plan (WLA TIMP) Specific Plans Amendment Project (Proposed Project).

4.1.1.1 Organization of the Section

The section is organized as follows:

- **Regulatory Framework** summarizes the regulated pollutants and the applicable federal, state, and local regulations, policies, and guidelines pertaining to air quality.
- **Existing Setting** describes the existing ambient air quality in the project area.
- **Methodology** describes the approach and models used to evaluate project impacts.
- **Thresholds of Significance** lists the thresholds used in identifying significant impacts as identified in Appendix G of the State CEQA Guidelines and the L.A. CEQA Thresholds Guide (City of Los Angeles, 2006), and as established by the South Coast Air Quality Management District (SCAQMD).
- **Impacts and Mitigation Measures** discusses the effects of project implementation on air quality in the project area. Where appropriate, recommended mitigation measures are identified to reduce significant impacts. The **Significance of Impacts After Mitigation** is also identified.

4.1.1.2 Definitions of Technical Terminology

This section uses technical terminology to describe air quality. Definitions of these terms are provided in **Table 4.1-1.**

Table 4.1-1 Key Air Quality Terminology

Term	Acronym	Definition
California Ambient Air Quality Standards	CAAQS	Health- and welfare-based standards for outdoor air which identify the maximum acceptable average concentrations of air pollutants during a specified period of time
Carbon Monoxide	CO	An odorless, colorless gas often formed in the process of incomplete combustion of organic substances, which can reduce the body's ability to carry oxygen and results in numerous adverse health effects
California Emissions Estimator Model	CalEEMod	A statewide land use emissions computer model used to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects
California Clean Air Act	CCAA	A California law passed in 1988 which provides the basis for air quality planning and regulation independent of federal regulations. A major element of the Act is the requirement that local air districts in violation of the CAAQS must prepare attainment plans that identify air quality problems, causes, trends and actions to be taken to attain and maintain California's air quality standards by the earliest practicable date.
Clean Air Act	CAA	Federal law passed in 1970 which forms the basis for national air pollution control. The act includes national ambient air quality standards for major air pollutants, mobile and stationary control measures, and air toxics standards.
Criteria Air Pollutant	--	Six common air pollutants for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Examples include: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, PM10 and PM2.5.
Diesel Particulate Matter	DPM	A component of diesel exhaust considered to be a major contributor to human health impacts
Emission Factors Model	EMFAC	Model developed by CARB to evaluate vehicle emissions
Hazardous Air Pollutants	HAP	Pollutants regulated by the federal CAA and known or suspected to cause cancer or other serious health effects or adverse environmental effects
National Ambient Air Quality Standards	NAAQS	National standards established by the U.S. Environmental Protection Agency under the authority of the federal CAA addressing pollutants considered harmful to public health and the environment
National Emission Standards for Hazardous Air Pollutants	NESHAP	Federal stationary source standards for hazardous air pollutants
Nitrogen Dioxide	NO_2	Poisonous reactive gas that is formed during high-temperature combustion processes, such as those occurring in vehicle engines, that can cause adverse respiratory effects
Ozone	O_3	Highly reactive and unstable gas that is formed in the atmosphere through complex reactions with NOx and VOCs in the presence of sunlight that can cause adverse respiratory effects and environmental damage; ozone is a major component of smog
Particulate Matter	PM	Particles of dust, soot, aerosols, and other matter that can become embedded in the lungs with adverse health effects
Reactive Organic Gases	ROG	Photochemically reactive chemical gas that may contribute to the formation of smog
South Coast Air Basin	SoCAB	Air basin regulated by SCAQMD and including all of Orange County and the urban, non-desert portions of Los Angeles, Riverside, and San Bernardino counties

Term	Acronym	Definition
Sulfur Dioxide	SO_2	Chemical compound that is linked to a number of adverse effects on the respiratory system
Toxic Air Contaminants	TAC	Air pollutants regulated by the State of California that may cause or contribute to an increase in mortality or serious illness, or which may pose a present and potential hazard to human health
Volatile Organic Compounds	VOC	Compounds released into the atmosphere which are involved in photochemical pollution

Source: CARB, undated; CDM Smith, 2015.

4.1.2 Regulatory Framework

Air quality within the project area is regulated by the U.S. Environmental Protection Agency (USEPA), California Air Resources Board (CARB), South Coast Air Quality Management District (SCAQMD), and the City of Los Angeles. Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although USEPA regulations may not be superseded, both state and local regulations may be more stringent. The regulatory requirements cited below focus on those regulations that pertain to the transportation improvements that would be associated with the Proposed Project. As the Proposed Project would not modify land use designations or zoning and would not involve the construction of new residential facilities, regulations and guidelines pertaining to health effects associated with siting of new land uses, use of renewable energy in new buildings, and building codes aimed at sustainable construction that would, among other things, reduce air emissions associated with building energy consumption, are not discussed in this section.

4.1.2.1 Federal

Criteria Air Pollutants

The USEPA is responsible for implementation of the Clean Air Act (CAA). The CAA in its current form was enacted in 1970 and has been amended a number of times, most recently in 1997. Under authority of the CAA, USEPA established National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), inhalable particulate matter with diameter of ten microns[6] or less (PM10), fine particulate matter with diameter of 2.5 microns or less (PM2.5), and sulfur dioxide (SO_2). The CAA identifies two types of NAAQS: 1) primary standards define concentrations that are necessary, with an adequate margin of safety, to protect the public health; and 2) secondary standards define concentrations that are necessary to protect the public welfare from any known or anticipated adverse effects of the pollutant (40 Code of Federal Regulations [CFR] 50.2(b)). **Table 4.1-2** presents the current primary and secondary NAAQS for the criteria pollutants.

6 A micron is a unit of measurement that is one-millionth of a meter. A meter is slightly larger than 3 feet.

Table 4.1-2 National Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS Primary	NAAQS Secondary	Violation Criteria
CO	1 Hour	35 ppm (40 mg/m³)	N/A	Not to be exceeded more than once per year
	8 Hour	9 ppm (10 mg/m³)		
NO_2	1 Hour	100 ppb (188 µg/m³)	N/A	98th percentile of 1-hour daily maximum concentrations, averaged over three years
	Annual	53 ppb (100 µg/m³)	Same as Primary Standard	Annual mean
O_3	8 Hour	0.075 ppm (147 µg/m³)	Same as Primary Standard	Annual fourth-highest daily maximum 8-hour concentration, averaged over three years
PM10	24 Hour	150 µg/m³	Same as Primary Standard	Not to be exceeded more than once per year on average over three years
PM2.5	24 Hour	35 µg/m³	Same as Primary Standard	98th percentile, averaged over three years
	Annual	12 µg/m³	15 µg/m³	Annual mean, averaged over three years
SO_2	1 Hour	75 ppb (196 µg/m³)	N/A	99th percentile of 1-hour daily maximum concentrations, averaged over three years
	3 Hour	N/A	0.5 ppm (1,300 µg/m³)	Not to be exceeded more than once per year
	24 Hour[1]	0.14 ppm (366 µg/m³)	N/A	Not to be exceeded more than once per year
	Annual[1]	0.030 ppm (79 µg/m³)		Annual mean
Pb	Rolling 3-Month Average	0.15 µg/m³	Same as Primary Standard	Not to be exceeded

Source: USEPA, 2014f.

Notes:

1. On June 22, 2010, the 24-hour and annual primary SO2 NAAQS were revoked (75 Federal Register [FR] 35520). The 1971 SO2 NAAQS (0.14 parts per million [ppm] and 0.030 ppm for 24-hour and annual averaging periods) remain in effect until one year after an area is designated for the 2010 1-hour primary standard. USEPA has designated parts of 16 states as nonattainment based on 2009-2011 monitoring data, effective October 4, 2013, but deferred action on all other areas (78 FR 47191). CARB recommended to USEPA in June 2011 to designate all areas of California as in attainment (CARB, 2011). USEPA has not yet designated attainment status for the Los Angeles County subarea of the South Coast Air Basin.

Key:

µg/m³ = micrograms per cubic meter
CO = carbon monoxide
mg/m³ = milligrams per cubic meter
N/A = not applicable
NAAQS = National Ambient Air Quality Standard
NO_2 = nitrogen dioxide
O_3 = ozone
Pb = lead
PM10 = inhalable particulate matter
PM2.5 = fine particulate matter
ppb = parts per billion
ppm = parts per million
SO_2 = sulfur dioxide

Toxic Air Contaminants

Section 112 of the CAA (42 USC 7412(b)(1)) established an initial list of 187 hazardous air pollutants (HAPs) and required the USEPA to publish a list of all categories and subcategories of major sources[7] and area sources[8] that could emit each HAP. Section 112 also establishes the National Emissions Standards for Hazardous Air Pollutants (NESHAP) program (40 CFR 61 and 40 CFR 63). The 1990 CAA Amendments established NESHAPs that require the application of technology-based emission standards, called maximum achievable control technology (MACT), that are based on emission levels already achieved by similar industries (40 CFR 63). The MACT standards cover 45 stationary source industries, such as chemical plants, oil refineries, aerospace manufacturers, and steel mills.

Mobile source toxic air contaminants (also referred to as mobile source air toxics or MSATs) are emitted from highway vehicles and nonroad equipment, such as those used in construction activities. Typical mobile source air toxics include benzene, 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, and diesel particulate matter (DPM). In February 2007, the USEPA adopted controls on gasoline, passenger vehicles, and portable fuel containers to reduce emissions of benzene and other HAPs (72 FR 8428). Section 211 of the CAA (42 USC 7545(k)(3)(B)) also requires reformulated gasoline to be used during the high O_3 season to reduce emissions of both volatile organic compounds (VOCs) and HAPs. Various regulations also govern efforts to reduce DPM emissions.

Odors

There are no federal laws, regulations, or policies pertaining to odors.

4.1.2.2 State

Criteria Air Pollutants

The California Clean Air Act (CCAA), signed into law in 1988, substantially added to the authority and responsibilities of the State's air pollution control districts. The CCAA establishes an air quality management process that generally parallels the federal process. The CCAA, however, focuses on attainment of the California Ambient Air Quality Standards (CAAQS) that, for certain pollutants and averaging periods, are typically more stringent than the comparable NAAQS; however, in the case of short-term standards for NO_2 and SO_2, the CAAQS are less stringent than the NAAQS.[9] **Table 4.1-3** summarizes the CAAQS.

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7 A "major source" is defined as "any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit, considering controls, in the aggregate, 10 tons per year or more of any HAP or 25 tons per year or more of any combination of HAPs" (42 USC 7412(a)(1)).

8 An "area source" is defined as "any stationary source of HAPs that is not a major source." Motor vehicles and nonroad vehicles subject to regulation are excluded from the definition (42 USC 7412(a)(2)).

9 The numerical value of the 1-hour CAAQS for NO_2 and SO_2 are higher than those for the NAAQS; however, the criteria used to determine a violation of these standards are different. The CAAQS are never to be exceeded, while the NAAQS criteria are based on the 98^{th} percentile and 99^{th} percentile (respectively for NO_2 and SO_2) of the daily maximum values, thus maximum measured 1-hour NO_2 and SO_2 values do not necessarily indicate a violation of the NAAQS.

Table 4.1-3 California Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS	Violation Criteria
CO	1 Hour	20 ppm (23 mg/m^3)	Not to be exceeded
	8 Hour	9.0 ppm (10 mg/m^3)	
NO_2	1 Hour	0.18 ppm (339 µg/m^3)	Not to be exceeded
	Annual	0.030 ppm (57 µg/m^3)	
O_3	1 Hour	0.09 ppm (180 µg/m^3)	Not to be exceeded
	8 Hour	0.070 ppm (137 µg/m^3)	
PM10	24 Hour	50 µg/m^3	Not to be exceeded
	Annual	20 µg/m^3	
PM2.5	Annual	12 µg/m^3	Not to be exceeded
SO_2	1 Hour	0.25 ppm (655 µg/m^3)	Not to be exceeded
	24 Hour	0.04 ppm (105 µg/m^3)	
Pb	30-Day Average	1.5 µg/m^3	Not to be equaled or exceeded
Visibility Reducing Particles	8 Hour	Extinction of 0.23 per kilometer within 10 miles	Not to be exceeded
Sulfates	24 Hour	25 µg/m^3	Not to be equaled or exceeded
Hydrogen sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Not to be equaled or exceeded
Vinyl chloride	24 Hour	0.01 ppm (26 µg/m^3)	Not to be equaled or exceeded

Source: CARB, 2013.

Key:
µg/m^3 = micrograms per cubic meter
CAAQS = California Ambient Air Quality Standard
CO = carbon monoxide
mg/m^3 = milligrams per cubic meter
NO_2 = nitrogen dioxide
O_3 = ozone
Pb = lead
PM10 = inhalable particulate matter
PM2.5 = fine particulate matter
ppm = parts per million
SO_2 = sulfur dioxide

The CCAA requires that the CAAQS be met as expeditiously as practicable, but does not set precise attainment deadlines. Instead, the act established increasingly stringent requirements for areas that will require more time to achieve the standards.

The air quality attainment plan requirements established by the CCAA are based on the severity of air pollution problems caused by locally generated emissions. Upwind air pollution control districts are required to establish and implement emission control programs commensurate with the extent of pollutant transport to downwind districts.

CARB has been granted jurisdiction over a number of air pollutant emission sources that operate in the state. Specifically, CARB is responsible for developing emission standards for on-road motor vehicles and some off-road equipment in the state. In addition, CARB develops guidelines for the local districts to use in establishing air quality permit and emission control requirements for stationary sources subject to the local air district regulations.

Toxic Air Contaminants

The Toxic Air Contaminant Identification and Control Act (Assembly Bill [AB] 1807) established a process for both identifying TACs and then managing any risk associated with each substance. AB 2728 further amended AB 1807 by requiring CARB to identify all federal HAPs as TACs. CARB works collaboratively with the Office of Environmental Health Hazard Assessment (OEHHA) to assess the potential for human exposure to a potential TAC (CARB) and to evaluate any possible health effects (OEHHA). An independent Scientific Review Panel eventually reviews all findings following a series of public workshops (CARB, 2014d).

The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) requires stationary sources (facilities) to report the types and quantities of TACs released into the atmosphere (CARB, 2014c). Following the preparation of TAC emission inventories, local air districts then rank (prioritize) the facilities based on three main parameters: emissions, potency or toxicity, and the proximity of potential receptors. Local air districts then use these three factors to calculate a score that determines if a facility should complete a health risk assessment (California Air Pollution Control Officers Association, 1990). AB 2588 also contains provisions that require air districts to notify the public of significant risks associated with nearby facilities. Senate Bill (SB) 1731 further amends AB 2588 by requiring the reduction of significant risks (CARB, 2014c).

CARB promulgated several mobile and stationary source Airborne Toxic Control Measures (ATCMs) that are codified in the California Code of Regulations (CCR). Examples of mobile source ATCMs include limits on DPM emissions from portable engines and limits on diesel-fueled commercial motor vehicle idling. Stationary source ATCMs include limits on specific industries like retail service stations, non-ferrous metal melting, and dry cleaners. Additional stationary source ATCMs cover asbestos emissions from construction, grading, quarrying, and surface mining operations and criteria pollutant emissions from stationary compression ignition engines (CARB, 2015c).

CARB identified DPMs as TACs in August 1998. The Diesel Advisory Committee of CARB finalized the documents Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles, and the Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines on September 28, 2000. Statewide regulations were then developed and continue to be developed to reduce DPM from diesel-fueled engines (CARB, 2000a; CARB, 2000b).

In March 2015, OEHHA released the Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for the Preparation of Health Risk Assessments (referred to as the Guidance Manual; OEHHA, 2015). As described on CARB's website, the Guidance Manual is designed to improve estimates of potential lifetime cancer and noncancer risks from air toxics by refining data for individuals of all ages, and reflecting new science about the increased childhood sensitivity to air toxics. The new risk methodologies will result in higher estimated risks for many situations than would have been calculated by the previous risk methodology (CARB, 2015).

Odors

There are no state laws, regulations, or policies pertaining to odors.

4.1.2.3 Regional

Air Quality Plans and Guidance

Air Quality Management Plan

The SCAQMD, in association with CARB and the Southern California Association of Governments (SCAG), is responsible for preparing the Air Quality Management Plan (AQMP) that details how the region intends to attain or maintain the state and federal ambient air quality standards (SCAQMD, 2013).

The purpose of the 2012 AQMP is to provide updated air pollution control strategies to bring the South Coast Air Basin (SoCAB) into compliance with various federal ambient air quality standards. The 2012 AQMP relied upon the most recent planning assumptions from jurisdictions within SoCAB, as well as SCAG's forecast assumptions based on its 2012 Regional Transportation Plan. It is expected that implementing the 2012 AQMP control measures will provide benefits of improved air quality, with a resulting improvement in public health. Other anticipated benefits include improved visibility, reduced destruction of materials and buildings, reduced damage to agricultural crops and habitat for wildlife, and more efficient land use patterns and transportation systems. Finally, control measures incorporated into the 2012 AQMP have the potential to reduce reliance on traditional petroleum fuels, with reductions in greenhouse gas emissions (GHG) (SCAQMD, 2012a; SCAQMD, 2012b).

The 2012 AQMP describes the SCAQMD's plan to attain the federal 24-hour PM2.5 standard by 2014[10] and to continue improving O_3 levels. Proposed control measures include reducing PM2.5 and nitrogen oxides (NOx) emissions from on- and off-road vehicle engines and locomotives. In 2007, CARB adopted a regulation to reduce DPM and NOx emissions from in-use (existing) off-road heavy-duty diesel vehicles. The 2012 AQMP proposes to carry forward control measures for O_3 presented in the Final 2007 AQMP, which includes requiring the use of cleaner (as compared to "baseline") off-road equipment.

Regional Transportation Plan/Sustainable Communities Strategy

SCAG adopted the 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) on April 4, 2012, and subsequent amendments of project lists were approved on June 6, 2013 and September 11, 2014. The 2012-2035 RTP/SCS aims to reduce emissions from transportation source to comply with SB 375[11], improve public health, and meet the NAAQS. The following goals are included in the 2012-2035 RTP/SCS:

- Align the plan investments and polices with improving regional economic development and competitiveness;
- Maximize mobility and accessibility for all people and goods in the region;
- Ensure travel safety and reliability for all people and goods in the region;

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10 According to the board meeting agenda for June 5, 2015, SCAQMD analysis of 2013-2014 and preliminary 2015 showed that attainment of the 2006 24-hour PM2.5 NAAQS had not occurred by the 2012 AQMP goal of 2014 nor is likely to occur by the CAA requirement of 2015 due to the drought. If the SoCAB does not attain the NAAQS by 2016, the basin would be reclassified as a serious nonattainment area. Attainment of the 2012 annual PM2.5 NAAQS will be addressed in the 2016 AQMP, and SCAQMD is planning to include a serious area 24-hour state implementation plan in the 2016 AQMP (SCAQMD 2015b).

11 SB 375 required CARB to develop regional GHG reduction targets for passenger vehicles for 2020 and 2035.

- Preserve and ensure a sustainable regional transportation system;
- Maximize the productivity of our transportation system;
- Protect the environment and health for our residents by improving air quality and encouraging active transportation (non-motorized transportation, such as bicycling and walking);
- Actively encourage and create incentives for energy efficiency, where possible;
- Encourage land use and growth patterns that facilitate transit and non-motorized transportation; and
- Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies.

SCAQMD CEQA Air Quality Handbook

SCAQMD prepared the CEQA Air Quality Handbook (SCAQMD, 1993) to provide guidance regarding methodologies to be used in the evaluation of air quality impacts associated with proposed projects and thresholds for determining the significance of project-related impacts. Portions of the Handbook are currently obsolete, due to changes in air quality models and analytical methodologies, trip generation characteristics of land uses, emission factors, and significance thresholds. SCAQMD is currently in the process of developing a new guidance handbook to replace the 1993 Handbook, and has published various supplements[12] that provide updated methodologies for analyzing air quality impacts as well as updated thresholds of significance.

SCAQMD Rules and Regulations

All projects in the SCAQMD jurisdiction are subject to SCAQMD rules and regulations. The following rules are applicable to the Proposed Project:

- Rule 401, Visible Emissions, prohibits an air discharge that results in a shade that is as dark or darker than what is designated as No. 1 Ringelmann Chart by the United States Bureau of Mines for an aggregate of three minutes in any one hour.
- Rule 402, Nuisance, prohibits the discharge of "air contaminants or other materials which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public."
- Rule 403, Fugitive Dust, would require the proposed transportation projects to control fugitive dust from any active operation, open storage pile, or disturbed surface area.

4.1.2.4 Local

City of Los Angeles California Environmental Quality Act Thresholds Guide

The L.A. CEQA Thresholds Guide (2006) describes significance thresholds to be used in air quality analyses and outlines methodologies for determining significance. It refers to the SCAQMD CEQA Air Quality Handbook (1993) for appropriate thresholds. Although SCAQMD has not published an updated Handbook, as noted above, various supplements have been published that provide updated

12 Current supplements to the SCAQMD CEQA Air Quality Handbook are available online at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook.

methodologies for analyzing air quality impacts as well as updated thresholds of significance. These current SCAQMD methodologies and significance thresholds were used in this analysis and are presented in detail below.

City of Los Angeles General Plan – General Plan Framework Element

The General Plan's guiding document is the Framework Element, which provides a strategy for long-range growth and development focused around the following guiding principles: economic opportunity, equity, environmental quality, strategic investment, clear and consistent rules, and effective implementation. These principles provide direction around topics such as Land Use, Housing, Economic Development, and Transportation, among others, that are further developed in related Elements in the General Plan. The Framework Element establishes the big-picture goals that are then further refined in other planning documents, such as community plans, specific plans, and the zoning code.

City of Los Angeles General Plan – Air Quality Element

The City of Los Angeles adopted an Air Quality Element that is part of the General Plan in 1992. The following goals, objectives, and policies from the Air Quality Element are applicable to the Proposed Project.

- Goal 1: Good air quality and mobility in an environment of continued population growth and healthy economic structure.
  - Objective 1.1: It is the objective of the City of Los Angeles to reduce air pollutants consistent with the Regional AQMP, increase traffic mobility, and sustain economic growth citywide.
  - Objective 1.3: It is the objective of the City of Los Angeles to reduce particulate air pollutants emanating from unpaved areas, parking lots, and construction sites.
- Goal 3: Efficient management of transportation facilities and system infrastructure using cost-effective system management and innovative demand-management techniques.
  - Objective 3.2: It is the objective of the City of Los Angeles to reduce vehicular traffic during peak periods.
  - Objective 3.3: It is the objective of the City of Los Angeles to install Automated Traffic Surveillance and Control Systems, utilize channelization of streets and other capital programs commensurate with the City's portion of regional goals.
- Goal 4: Minimal impact of existing land use patterns and future land use development on air quality by addressing the relationship between land use, transportation, and air quality.
  - Objective 4.2: It is the objective of the City of Los Angeles to reduce vehicle trips and vehicle miles traveled associated with land use patterns.
    - *Policy 4.2.2: Improve accessibility for the City's residents to places of employment, shopping centers, and other establishments.*
    - *Policy 4.2.3: Ensure that new development is compatible with pedestrians, bicycles, transit, and alternative fuel vehicles.*

- *Policy 4.2.4: Require that air quality impacts be a consideration in the review and approval of all discretionary projects.*
- *Policy 4.2.5: Emphasize trip reduction, alternative transit and congestion management measures for discretionary projects.*

City of Los Angeles General Plan – Mobility Plan 2035

The City of Los Angeles updated the Transportation Element of the City's General Plan, now referred to as Mobility Plan 2035 or MP 2035, to reflect policies and programs that will lay the policy foundation for safe, accessible, and enjoyable streets for pedestrians, bicyclists, transit users, and vehicles throughout the City of Los Angeles, including the Westside. The MP 2035 and Final EIR were adopted on August 11, 2015. MP 2035 is compliant with the 2008 Complete Streets Act (AB 1358), which mandates that the circulation element of a city's General Plan be modified to plan for a balanced, multimodal transportation network that meets the needs of all users of streets, roads, and highways, defined to include motorists, pedestrians, bicyclists, children, persons with disabilities, seniors, movers of commercial goods, and users of public transportation, in a manner that is suitable to the rural, suburban, or urban context of the general plan.

The following goals, objectives, and policy topics from the MP 2035 are applicable to the Proposed Project.

- **Goal: Clean Environment and Healthy Communities** focuses on topics related to environment, health, clean air, clean fuels and fleets, and open street events.
  - Objective: Decrease vehicle miles traveled (VMT) per capita by 5 percent every five years, to 20 percent by 2035.
  - Objective: Meet a 9 percent per capita GHG reduction for 2020 and a 16 percent per capita reduction for 2035 (SCAG RTP).
  - Objective: Reduce the number of unhealthy air quality days to zero by 2025.
  - Policy Topic 5.1: Sustainable Transportation. Encourage the development of a sustainable transportation system that promotes environmental and public health.
  - Policy Topic 5.2: VMT. Support ways to reduce VMT per capita.

City of Los Angeles General Plan – Plan for A Healthy Los Angeles (General Plan Health and Wellness Element)

The City of Los Angeles adopted the Plan for A Healthy Los Angeles as part of the General Plan in 2015. The following goals, objectives, and policy topics from the Plan for A Healthy Los Angeles are applicable to the Proposed Project.

- **Goal 5: An Environment Where Life Thrives**
  - Objective: Decrease the respiratory disease mortality rate citywide by 20 percent and reduce the disparity between the City Council Districts with the highest and lowest respiratory disease mortality rates by at least 50 percent.

- Objective: Decrease the rate of asthma-related emergency department (ED) visits among children citywide by 20 percent and reduce the disparity between the Community Plan Areas with the highest and lowest rates of ED by at least 50 percent.

- Objective: Reduce the disparity in communities that are impacted by a high Pollution Exposure Score (exposure to six exposures indicators, including ozone, and PM2.5 concentrations, diesel, PM concentrations, pesticide use, toxic releases from facilities, and traffic density) so that every zip code has a score less than 1.7 (current citywide average).

- Policy Topic 5.1: Air pollution and respiratory health. Reduce air pollution from stationary and mobile sources; protect human health and welfare and promote improved respiratory health.

4.1.3 Existing Setting

The amount of emissions released by sources and the atmosphere's ability to transport and dilute such emissions determine ambient concentrations of criteria air pollutants, TACs, and odors. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Therefore, natural factors like topography, meteorology, and climate determine existing air quality conditions in the area, as does the amount of emissions released by existing sources.

CARB divided California into regional air basins according to common topographic and meteorological features. The Proposed Project is located in the Los Angeles County subarea of the SoCAB, which is under the jurisdiction of the SCAQMD. The SCAQMD is the regional agency responsible for air quality regulations within the SoCAB including enforcing the CAAQS and implementing strategies to improve air quality and to mitigate effects from new growth.

4.1.3.1 Climate

The climate of the SoCAB is determined primarily by terrain and geography. Regional meteorology is dominated by a persistent high pressure area that commonly resides over the eastern Pacific Ocean. Seasonal variations in the strength and position of this pressure cell cause changes in area weather patterns. Local climactic conditions are characterized by warm summers, mild winters, infrequent rainfall, moderate daytime on-shore breezes, and moderate humidity. The SoCAB's normally mild climate is occasionally interrupted by periods of hot weather, winter storms, and hot, easterly Santa Ana winds.

The SoCAB area has high levels of air pollution, particularly from June through September. Factors leading to high levels of pollution include a large amount of pollutant emissions, light winds, and shallow vertical atmospheric mixing. These factors reduce pollutant dispersion, exacerbating elevated air pollution levels. Pollutant concentrations in the SoCAB vary by location, season and time of day. Concentrations of O_3, for example, tend to be lower along the coast and in far inland areas of the basin and adjacent desert, and higher in and near inland valleys.

4.1.3.2 Air Monitoring Data

Criteria Pollutants

Air quality data from a monitoring station near the project area are summarized in **Table 4.1-4 through Table 4.1-6**. Monitoring data from the three monitoring stations in Los Angeles (Veteran's Administration Hospital, CARB Number 70091, USEPA Number 060370113; Los Angeles International Airport [LAX], CARB Number 70111, USEPA Number 060375005; and North Main Street, Los Angeles, CARB Number 70087, USEPA Number 060371103) are presented (CARB, 2015b; USEPA, 2014d). These stations best represent air quality conditions in the project area.

Table 4.1-4 Air Monitoring Data – West Los Angeles

Pollutant[1]	2012	2013	2014
CO			
1st high 1-hour concentration, ppm	2.1	1.9	2.2
2nd high 1-hour concentration, ppm	1.7	1.9	2.0
1st high 8-hour concentration, ppm	1.15	1.3	1.3
2nd high 8-hour concentration, ppm	1.15	1.2	1.2
NO_2			
1st high 1-hour concentration, ppb	61	51	63
98th percentile 1-hour concentration, ppb	54	49	54
Annual average, ppb	13	*	*
O_3			
1st high 1-hour concentration, ppm	0.093	0.088	0.116
1st high 8-hour concentration, ppm	0.074	0.076	0.095
4th high 8-hour concentration, ppm	0.065	0.059	0.077

Source: CARB, 2015b; USEPA, 2014d.

Notes:

1. State and national statistics may differ for the following reasons: State statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.

Key:

* = There was insufficient (or no) data available to determine this value.
CO = carbon monoxide
NO_2 = nitrogen dioxide
O_3 = ozone
ppb = parts per billion
ppm = parts per million

Table 4.1-5 Air Monitoring Data – Los Angeles International Airport

Pollutant[1]	2012	2013	2014
CO			
1st high 1-hour concentration, ppm	2.8	3.1	2.7
2nd high 1-hour concentration, ppm	2.6	3.0	2.6
1st high 8-hour concentration, ppm	1.73	2.5	1.9
2nd high 8-hour concentration, ppm	1.51	2.5	1.8
NO_2			
1st high 1-hour concentration, ppb	77	77	87
98th percentile 1-hour concentration, ppb	55	58	66
Annual average, ppb	*	12	12
O_3			
1st high 1-hour concentration, ppm	0.106	0.105	0.114
1st high 8-hour concentration, ppm	0.075	0.082	0.080

Pollutant[1]	2012	2013	2014
4th high 8-hour concentration, ppm	0.059	0.060	0.071
PM10			
1st high 24-hour concentration, µg/m³	30	37	45
2nd high 24-hour concentration, µg/m³	30	35	40
Annual average, µg/m³			
SO_2			
1st high 1-hour concentration, µg/m³	0.005	0.010	0.015
99th percentile 1-hour concentration, µg/m³	0.005	0.007	0.009
1st high 24-hour concentration, µg/m³	0.002	0.002	0.003
2nd high 24-hour concentration, µg/m³	0.001	0.002	0.002
Pb			
1st high 24-hour concentration, µg/m³	0.008	0.007	0.011

Source: CARB, 2015b; USEPA, 2014d.

Notes:

1. State and national statistics may differ for the following reasons: State statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.

Key:

* = There was insufficient (or no) data available to determine this value.
µg/m3 = micrograms per cubic meter
CO = carbon monoxide
NO_2 = nitrogen dioxide
O_3 = ozone
Pb = lead
PM10 = inhalable particulate matter
ppb = parts per billion
ppm = parts per million
SO_2 = sulfur dioxide

Table 4.1-6 Air Monitoring Data – Downtown Los Angeles

Pollutant[1]	2012	2013	2014
CO			
1st high 1-hour concentration, ppm	2.2	2.5	2.5
2nd high 1-hour concentration, ppm	2.1	2.5	2.4
1st high 8-hour concentration, ppm	1.91	2	2
2nd high 8-hour concentration, ppm	1.74	1.8	1.9
NO_2			
1st high 1-hour concentration, ppb	77	90	82
98th percentile 1-hour concentration, ppb	69	63	69
Annual average, ppb	25	22	22
O_3			
1st high 1-hour concentration, ppm	0.093	0.081	0.113
1st high 8-hour concentration, ppm	0.077	0.070	0.095
4th high 8-hour concentration, ppm	0.068	0.060	0.072
PM10			
1st high 24-hour concentration, µg/m³	90.9	74.5	86.8
2nd high 24-hour concentration, µg/m³	74	46	61
Annual average, µg/m³	30	35.3	30.2
PM2.5			
98th percentile 24-hour concentration, µg/m³	32	29	35
Annual average (National), µg/m³	12.5	12	12.4
Annual average (California), µg/m³	12.7	19	*

Pollutant[1]	2012	2013	2014
SO_2			
1st high 1-hour concentration, $\mu g/m^3$	5	6	5
99th percentile 1-hour concentration, $\mu g/m^3$	5	5	4
1st high 24-hour concentration, $\mu g/m^3$	2	2	1
2nd high 24-hour concentration, $\mu g/m^3$	1	1	1
Pb			
1st high 24-hour concentration, $\mu g/m^3$	0.024	0.019	0.019

Source: CARB, 2015b; USEPA, 2014d.

Notes:

1. State and national statistics may differ for the following reasons: State statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.

Key:

* = There was insufficient (or no) data available to determine this value.
µg/m3 = micrograms per cubic meter
CO = carbon monoxide
NO_2 = nitrogen dioxide
O_3 = ozone
Pb = lead
PM10 = inhalable particulate matter
PM2.5 = fine particulate matter
ppb = parts per billion
ppm = parts per million
SO_2 = sulfur dioxide

Toxic Air Contaminants

CARB maintains a network of 17 air quality monitoring stations that measure ambient concentrations of 64 TACs. The closest monitoring station to the study area is located in downtown Los Angeles. DPM is not monitored at the stations because there is no widely accepted monitoring method available. As such, CARB uses studies from the San Joaquin Valley, South Coast, and San Jose to obtain speciated PM10 ambient data, ambient 1990 PM10 monitoring network data, and 1990 PM10 emissions inventory data to estimate outdoor ambient exposures to DPM. Simple ratios between the 1990 data and the current inventory year's data are then used to estimate the current year's DPM ambient concentration (CARB, 2000a).

Regions of the state that have not met one or more of the CAAQS are known as nonattainment areas, while regions that meet the CAAQS are known as attainment areas. The Proposed Project is located in the Los Angeles County sub-area of the SoCAB. Los Angeles County is designated as a state nonattainment area for O_3, PM10, and PM2.5, and a state attainment or unclassified area for CO, NO_2, SO_2, Pb, sulfates, hydrogen sulfide, and visibility reducing particles (CARB, 2014b). The project location in Los Angeles County is also federally designated as an extreme nonattainment area for O_3, moderate nonattainment area for PM2.5, nonattainment area for Pb, maintenance area for CO, NO_2, and PM10, and attainment area for SO_2 (USEPA, 2015a). Attainment status for the Los Angeles County subarea of the SoCAB is summarized in **Table 4.1-7**.

Table 4.1-7 Attainment Status for Los Angeles County Subarea of SoCAB

Pollutant	National Standards	California Standards
CO	Maintenance	Attainment
NO_2	Maintenance	Attainment
O_3	Extreme Nonattainment	Nonattainment
PM10	Maintenance	Nonattainment
PM2.5	Moderate Nonattainment	Nonattainment
SO_2	Attainment	Attainment
Pb	Nonattainment	Attainment
Sulfates	N/A	Attainment
Hydrogen Sulfide	N/A	Unclassified
Visibility Reducing Particles	N/A	Unclassified

Source: CARB, 2014b; USEPA, 2015a.

Key:
CO = carbon monoxide
N/A = not applicable (not regulated)
NO_2 = nitrogen dioxide
O_3 = ozone
Pb = lead
PM10 = inhalable particulate matter
PM2.5 = fine particulate matter
SoCAB = South Coast Air Basin
SO_2 = sulfur dioxide

4.1.3.3 Sensitive Receptors

Various land uses exist within the project area, including residential developments of various densities; commercial, industrial, institutional, and public facilities; and open space. Some populations, such as children, the elderly, and those with respiratory diseases, are more likely to be affected by air pollution. SCAQMD defines sensitive receptors to include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent homes, and retirement homes (SCAQMD, 2005).

4.1.4 Methodology

4.1.4.1 Pollutants of Interest

Criteria Pollutants

USEPA regulates seven common pollutants called criteria pollutants. They include CO, Pb, NO_2, ozone O_3, PM10, PM2.5, and SO_2 (USEPA, 2015d). Each pollutant is described below.

Carbon Monoxide

CO is a colorless, odorless gas that is highly toxic. It is formed by the incomplete combustion of fuels. In Los Angeles County, over 94 percent of CO emissions occur from mobile sources (USEPA, 2015b). Exposure to CO can reduce the body's ability to carry oxygen. CO exposure can cause people with heart disease to experience chest pain (angina) when exercising or under increased stress. Extremely high levels of CO can cause death (USEPA, 2014e).

Nitrogen Dioxide

NO_2 is a poisonous reactive gas that is formed during high-temperature combustion processes, such as those occurring in vehicle engines and power plants. NO_2 forms when nitric oxide (NO) reacts with atmospheric oxygen. Most sources of NO_2 are man-made; the primary source of NO_2 is high-temperature combustion. For purposes of this analysis, emissions of nitrogen oxides (NOx), which include NO and NO_2, were used to determine NO_2 impacts. Mobile sources (85 percent) and fuel combustion (11 percent) make up the majority of sources of NOx in Los Angeles County (USEPA, 2015b).

Exposure to NOx can cause adverse respiratory effects including airway inflammation. NOx can react with ammonia, moisture, and other compounds to form small particles that can lodge deeply into sensitive parts of the lungs. This action can cause or worsen respiratory disease like emphysema and bronchitis and can aggregative existing heart disease (USEPA, 2014c).

Ozone

Ozone, commonly referred to as smog, is a highly reactive and unstable gas that is formed in the atmosphere through complex reactions with NOx and VOCs in the presence of sunlight. Hot, sunny, and calm days promote O_3 formation. USEPA regulates ground-level O_3, which is not to be confused with stratospheric O_3. Ground-level O_3 exists in the air close to where people live, breathe, and exercise and can cause adverse health effects; stratospheric O_3 is high in the atmosphere and reduces the amount of ultraviolet light entering the earth's atmosphere, which actually helps protect animal and plant life.

Certain people are particularly sensitive to the effects of O_3 including people with lung disease, children, older adults, and active people. Generally, as O_3 concentrations increase, both the number of people affected and the seriousness of the health effects increase. The effects of exposure to ground-level O_3 include cough, chest tightness, and pain upon taking a deep breath; worsening of wheezing and other asthma symptoms; reduced lung function; and increase hospitalizations for respiratory causes.

O_3 also has detrimental effects on the environment. O_3 exposure can damage cells and leaf tissue, reducing plants' ability to photosynthesize and produce food. Plants will grow more leaves in an attempt to produce more food, but this response has the net effect of making plants more susceptible to disease, pests, cold, and drought. O_3 can also damage materials like rubber, plastics, fabrics, paint and metals (USEPA, 2003; USEPA, 2009).

Ozone is a regional pollutant and ambient concentrations can only be predicted using regional photochemical models that account for all sources of precursors, which is beyond the scope of this analysis. Therefore, no photochemical O_3 modeling was conducted. Rather, following standard industry practice, the evaluation of O_3 was conducted by evaluating emissions of VOC and NOx, which are precursors in the formation of O_3. Mobile sources (36 percent), biogenics (29 percent), and solvents (24 percent) are the main sources of VOC in Los Angeles County (USEPA, 2015b).

Sulfur Dioxide

SO_2 is formed when fuel containing sulfur (typically, coal and oil) is burned. Certain industrial processes, such as petroleum refining and metal processing, also contribute to SO_2 emissions. Mobile emissions (38 percent), industrial processes (32 percent), and fuel combustion (27 percent) account for most of SO_2 emissions in Los Angeles County (USEPA, 2015b). Health effects of SO_2 exposure includes bronchoconstriction and increased asthma symptoms. SO_2 can also react with other compounds in the atmosphere to form small particles. Exposure to the resulting particles can aggravate existing heart disease, leading to increased hospital admissions and premature death (USEPA, 2015c).

Lead

Pb is a soft and chemically resistant metal that is naturally found in the environment. It has historically been found in motor vehicle gasoline, paints, lead-acid batteries, and secondary lead smelters. USEPA's efforts to remove Pb from gasoline in 1980 and beyond has substantially reduced airborne Pb. The aviation sector continues to be a major source of Pb emissions from piston aircraft, as are certain industrial sectors like ore and metals processing (USEPA, 2014g).

In addition to Pb exposure through air, Pb can also accumulate in soils and other sediments, especially in urban environments where it would have accumulated from years of exposure to leaded gasoline. Pb exposure can adversely affect the nervous system, kidney function, immune system, reproductive and development systems, and the cardiovascular system. Pb exposure may also contribute to behavioral problems, learning deficits, and lowered IQ in infants and young children (USEPA, 2014b). Emissions of Pb from the study area are minimal (USEPA, 2015b).

Inhalable and Fine Particulate Matter

PM consists of solid and liquid particles of dust, soot, aerosols, and other matter small enough to remain suspended in the air for a long period of time. PM is divided into two size classes of particles: particles up to 10 microns (PM10) and particles up to 2.5 microns (PM2.5). To place the sizes in perspective, a human hair is approximately 60 microns in diameter, which makes it six times larger than the largest coarse particle and over 20 times larger than the largest fine particle.

Particles smaller than 10 microns (i.e., PM10 and PM2.5) represent that portion of PM thought to represent the greatest hazard to public health because they can become deeply embedded in someone's lungs. This can lead to adverse health effects, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms (e.g., irritation of the airways, coughing, or difficulty breathing). Aside from adverse health effects, PM2.5 is primarily responsible for reduced visibility (haze) in the United States. PM can also cause aesthetic damage by staining or damaging stone and other materials (USEPA, 2013; USEPA, 2014a).

Primary particles are those that are directly emitted from a source, such as construction sites, unpaved roads, fields, smokestacks, or fires. Burning fuels primarily produces PM2.5, while other sources, like windblown dust, contribute to PM10 emissions. Secondary formation of PM2.5 can occur from complex reactions in the atmosphere of pollutants like NOx, sulfur oxides (SOx),[13] VOCs, and ammonia, which interact with other compounds in the air to form particulate matter. Most of the PM2.5 pollution in the United States occurs from these secondary reactions as opposed to direct (primary) emissions. The majority of PM10 in Los Angeles County is attributed to dust (39 percent), mobile emissions (23 percent), and industrial processes (22 percent). Main sources of PM2.5 in Los Angeles County are mobile sources (33 percent), industrial processes (21 percent), and fuel combustion (18 percent) (USEPA, 2015b).

Toxic Air Contaminants (TACs)

TACs are defined as air pollutants that may cause or contribute to an increase in mortality or serious illness, or which may pose a present and potential hazard to human health (California Health & Safety

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13 The term SOx accounts for distinct but related compounds, primarily SO_2 and, to a far lesser degree, sulfur trioxide (SO_3). As a conservative assumption for this analysis, it was assumed that all SOx is emitted as SO_2, therefore SOx and SO_2 are considered equivalent in this document and only the latter term is used henceforth.

Code Section 39655(a)). Toxic air pollutants are called HAPs in federal terms; however, the lists of TACs and HAPs are not the same. For example, California recognizes DPM and environmental tobacco smoke as toxic air pollutants, while the federal government does not (42 United States Code [USC] 7412(b)).

The health effects associated with TACs vary, but can generally be broken down into three main categories: cancer risks, chronic noncancer risks, and acute noncancer risks. Health risks are a measure of the chance that an individual will experience health problems. The California Almanac of Emissions and Air Quality Data (CARB, 2009b) indicates that ten TACs contribute the greatest health risk to California based on ambient air quality data. These TACs are acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and DPM. Of these TACs, DPM is of the greatest concern because it is estimated to be responsible for approximately 70 percent of the total ambient air toxics risk in the state (CARB, 2000a).

Motor vehicles and airports in and around the project area contribute to DPM and other TAC emissions.

Odors

Odors are generally regulated as nuisances and do not typically pose a health risk. Odorous processes or facilities often lead to citizen complaints to local governments. Odor impacts are subjective because different people have different sensitivities to odor.

4.1.4.2 Analytical Methods

This analysis evaluated potential temporary construction impacts and long-term operational impacts to air quality resulting from changes to the transportation system that would occur with implementation of the projects on the proposed CTCSP and WLA TIMP project lists. The air quality impact analyses for criteria pollutants include evaluations of emission inventories (i.e., the quantities of specific pollutants, typically expressed in pounds per day or tons per year) based on emission modeling. The criteria pollutant emissions inventories were developed using standard industry software/models and federal, state, and locally-approved methodologies. Results of the emission inventories from emission modeling were compared to daily thresholds established SCAQMD for the SoCAB. Modeling results are provided in Appendix D, *Air Quality/Greenhouse Gas Emissions*.

For the purpose of this analysis, potential construction-related emissions were estimated programmatically, because detailed plans have not been developed for implementation of any of the projects on the proposed CTCSP or WLA TIMP project lists. The projects most likely to require a substantial amount of heavy construction equipment include: (1) the Lincoln Boulevard Bridge Enhancement, (2) the center-running Bus Rapid Transit (BRTs) on Lincoln and Sepulveda boulevards, particularly the construction of BRT platforms, and (3) the I-10 Ramp Reconfiguration at Bundy Drive. In addition to the widening of the Lincoln Bridge over Ballona Channel, the Lincoln Boulevard Enhancement also includes widening the Lincoln Boulevard approaches on either side of the bridge, and modifications to Culver Boulevard, including widening of the Culver Boulevard Bridge over Lincoln Boulevard and modifications to the Culver Boulevard/ Lincoln Boulevard interchange. For purposes of the air quality analysis, it was assumed that the Lincoln Boulevard and Sepulveda Boulevard BRTs would require excavation down to the subsurface to install appropriate foundations for the BRT platforms. One set of modeling was done that estimates emissions associated with the two BRT improvement projects. While this methodology overstates impacts associated with each individual project, it accounts for potential concurrent construction. Similar to the Lincoln Boulevard and Sepulveda Boulevard BRT improvements, it was assumed that the I-10 Ramp Reconfiguration at Bundy Drive would require excavation down to the subsurface to remove and replace off-ramps. Because the construction activities associated with the Lincoln Boulevard and Sepulveda Boulevard BRT improvements would be similar to the activities associated with the I-10 Ramp Reconfiguration at Bundy Drive, the results of the BRT modeling were used to represent emissions associated with the I-10 ramp reconfiguration improvement. It should be noted that it is likely that the BRT results may overstate impacts associated with the ramp reconfiguration improvement, because the BRT improvements would entail construction at multiple platform sites.

Based on these assumptions, screening level emissions estimates were developed for these project types using the Roadway Construction Emissions Model, Version 7.1.5.1, provided by the Sacramento Air Quality Management District.[14] This spreadsheet model was developed specifically to estimate emissions from new roadway construction, roadway widening, and bridge construction projects. The model identifies the equipment and emissions associated with clearing and grubbing, grading and excavation, subsurface utilities installation, paving, soil cut and fill hauling, fugitive dust, and construction working trips. It develops the estimates based on limited input data: the length of the roadway or bridge, the project site acreage, and the volume of soil imported and exported. **Table 4.1-8** provides the list of construction equipment along with the default horsepower and number of units used in the Roadway Construction Emissions Model for the Lincoln Boulevard Bridge Enhancement, Lincoln Boulevard and Sepulveda Boulevard BRT platforms (combined impacts), and I-10 Ramp Reconfiguration at Bundy Drive.

Table 4.1-8 Roadway Construction Emissions Model Equipment

Equipment Type	Horsepower	Number of Units	
		Lincoln Boulevard Bridge Enhancement	Lincoln and Sepulveda BRTs (combined)/I-10 Ramp Reconfiguration at Bundy Drive
Air Compressors	106	1	1
Cranes	226	1	1
Crawler Tractors	208	1	1
Excavators	163	1-2	1-2
Generator Sets	66	1	1
Graders	175	1-2	1
Pavers	126	1	1
Paving Equipment	131	1	1
Plate Compactors	8	1	1
Pumps	53	1	1
Rollers	81	1-2	1-2
Rough Terrain Forklifts	100	1	1
Rubber Tired Loaders	200	1	1
Scrapers	362	1-2	1
Signal Boards	20	1-2	1-20
Tractor/Backhoes	98	1-2	1-3

Sources: SMAQMD, 2015; CDM Smith, 2015.

14 The Sacramento Air Quality Management District is the district that developed the Roadway Construction Emissions Model. This model was developed using emission factors that are applicable statewide, therefore, the model can be used to estimate roadway construction emissions in other air districts within the state.

Other transportation improvements included on the proposed CTCSP and WLA TIMP project lists would require a much lower intensity of construction than the Lincoln Boulevard Bridge Enhancement and the Lincoln Boulevard and Sepulveda Boulevard BRTs. For these projects, the California Emissions Estimator Model (CalEEMod), Version 2013.2.2, was used to estimate criteria and precursor pollutant emissions (VOCs, NOx, CO, SO_2, PM10, and PM2.5) associated with project-related construction and operations (California Air Pollution Control Officers Association, 2013). CalEEMod is a statewide land use emissions computer model that estimates construction and operational emissions from a variety of land use projects. CalEEMod also contains mitigation measures to reduce criteria pollutant emissions, if necessary. It was assumed that reactive organic gases (ROG) emissions from CalEEMod and the Emissions Factors Model (EMFAC), described below, are equivalent to VOC emissions (CARB, 2009a). The analysis does not estimate lead emissions because no major sources of lead would occur from project-related construction or operations.

For these lower intensity projects, it was assumed that construction of a typical improvement project would involve a rubber tired loader, an air compressor to power a jackhammer, a concrete mixer, and a paver. This equipment is typically used for construction activities that would be required by these projects, such as removal and replacement of asphalt and concrete that may be associated with the construction of cycle tracks, sidewalk improvements, traffic calming features, and bicycle transit centers, or the installation of minor new facilities, such as bus shelters, signage, streetscape improvements, and ITS equipment. In addition to the off-highway equipment, it was assumed that there would be haul and delivery truck trips and daily construction worker commute trips associated with the construction projects.

Because SCAQMD Rule 403 would be implemented to minimize fugitive dust, it was assumed that 61 percent of fugitive particulate matter emissions would be mitigated with implementation of each construction project. It was assumed that portions of the construction activities associated with the Lincoln Boulevard Bridge Enhancement would occur approximately 25 meters (82 feet) or less from the nearest sensitive receptor.[15] Other construction activities, including construction of the Lincoln Boulevard and Sepulveda Boulevard BRT improvements and the I-10 Ramp Reconfiguration at Bundy Drive, may also occur close to sensitive receptors. The construction-related air quality impacts of individual improvement projects will be evaluated at a project-level of detail prior to approval and implementation of the specific improvement. Total and onsite construction emission were calculated using the Roadway Construction Emissions Model for the Lincoln Boulevard Bridge Enhancement, the Lincoln/Sepulveda BRT stations, and the I-10 Ramp Reconfiguration at Bundy Drive; CalEEMod was used for the other transportation improvements.

CARB's EMFAC2014 Mobile Source Emission Inventory Model was used to calculate regional emissions from motor vehicles in the study area. EMFAC2014 provides emission rates for various on-road vehicle types at different speeds within different counties in California. The default EMFAC2014 fleet mix for the South Coast Air Basin portion of Los Angeles County was used to determine the county-wide emission factors (CARB, 2015a) by speed, summarized in 5 mph speed bins (5 mph, 10 mph, 15 mph, etc., through 60 mph). These emission factors were then multiplied by projected traffic volumes by speed bin to determine emissions. Fugitive road dust emissions were calculated using the USEPA's Compilation of Air Pollutant Emission Factors (AP-42) (USEPA, 2011).

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15 Twenty-five meters is the lowest distance in the model.

CARB's size fractions were used to calculate PM2.5 emission rates from PM10 emission rates for fugitive dust (CARB, 2014a). Study area VMT was obtained from the traffic analysis.

4.1.5 Thresholds of Significance

4.1.5.1 State Thresholds of Significance

The significance criteria described below were developed consistent with the State CEQA Guidelines to determine the significance of potential impacts on air quality that could result from implementation of the project. Impacts on air quality would be considered potentially significant 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 air basin is nonattainment (O_3 precursors [NOx and VOC], PM10, and PM2.5[16]) under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; and/or
- Create objectionable odors affecting a substantial number of people.

4.1.5.2 Local Thresholds of Significance

Mass Emissions Thresholds

The L.A. CEQA Thresholds Guide refers to the SCAQMD CEQA Air Quality Handbook for significance thresholds. If the Proposed Project were to result in substantial emissions that would exceed the significance criteria, then a significant impact would occur. **Table 4.1-9** summarizes the SCAQMD mass daily thresholds for construction and operation.

Table 4.1-9 SCAQMD Mass Daily Pollutant Emission Thresholds

Pollutant	Construction	Operation
NO_x	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SO_x	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

Source: SCAQMD, 2015a.

Key:
CO = carbon monoxide
lbs/day = pounds per day
NO_x = nitrogen oxides
PM10 = inhalable particulate matter
PM2.5 = fine particulate matter
SO_x = sulfur oxides
VOC = volatile organic compounds

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16 Although the project location in Los Angeles County is also federally designated as a nonattainment area for lead (Pb) (see Table 4.1-7), as discussed in Section 4.1.4.2, *Analytical Methods*, the air quality analysis in this EIR does not estimate lead emissions because no major sources of lead would occur from project-related construction or operations.

Localized Significance Thresholds

The SCAQMD also developed thresholds for local air quality impacts from construction activity (2008). Localized Significance Thresholds (LSTs) are only applicable to the following criteria pollutants: NOx, CO, PM10, and PM2.5. LSTs are intended to assist public agencies in determining whether or not a project may generate significant adverse localized air quality impacts. They represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor.

SCAQMD recommends using the equipment type to determine the maximum daily disturbed acreage when analyzing air emissions with CalEEMod: each crawler tractor, grader, or rubber tired dozer operating at the project site could disturb 0.5 acres per workday; a scraper could disturb one acre per workday. It is anticipated that less than one acre would be disturbed per day for this project; therefore, one-acre LSTs were used for this project (SCAQMD, 2011).

Table 4.1-10 summarizes the allowable emissions for construction emissions from a one-acre project located in the Northwest Coastal Los Angeles County Source-Receptor Area. LSTs consider ambient concentrations of pollutants for each source receptor area and distances to the nearest sensitive receptor. The closest portion of the Lincoln Boulevard Bridge Enhancement is estimated to be 25 meters (82 feet)[17] or less from the nearest sensitive receptor. Other proposed improvements (including the Lincoln Boulevard and Sepulveda Boulevard BRTs, I-10 Ramp Reconfiguration at Bundy Drive, and other improvements) may also be within 25 meters (82 feet) from a sensitive receptor. Therefore, the thresholds for this distance in the LST lookup tables (i.e. 25 meters, or approximately 82 feet) were used.

Table 4.1-10 Localized Significance Thresholds

Pollutant	Construction	Operation
CO	562 lbs/day	562 lbs/day
NOx	103 lbs/day	103 lbs/day
PM10	4 lbs/day	1 lbs/day
PM2.5	3 lbs/day	1 lbs/day

Source: SCAQMD, 2010.

Note: Localized significance thresholds presented in this table are for one-acre projects in Northwest Coastal LA County Source-Receptor Area that are 25 meters from the nearest sensitive receptor. This is the shortest distance provided in the LST lookup tables.

Key:
CO = carbon monoxide
lbs/day = pounds per day
NOx = nitrogen oxides
PM10 = inhalable particulate matter
PM2.5 = fine particulate matter

As described in SCAQMD's LST Methodology, only on-site emissions, which include fugitive dust and off-road construction equipment, were included in the LST analysis and not off-site mobile emissions from the project (e.g., construction worker commuting).

17 Twenty-five meters is the lowest distance in the lookup tables.

Toxic Air Contaminant Thresholds

For TACs, the SCAQMD significance thresholds are emissions of TACs that exceed the maximum incremental cancer risk of 10 in a million, a cancer burden of 0.5 excess cancer cases, or a chronic or acute hazard index of 1.0 for the project increment.

Odors

The L.A. CEQA Thresholds Guide considers a significant impact to occur if a project creates an objectionable odor at the nearest sensitive receptor. Similarly, SCAQMD considers a project that creates an odor nuisance to be significant.

4.1.6 Impacts and Mitigation Measures

The proposed update to the Transportation Impact Assessment Fee program and the administrative and minor revisions of the Specific Plans would not result in any physical impacts that could affect air quality. Therefore, the following analysis addresses whether implementation of the proposed updates to the lists of transportation improvements in the CTCSP and WLA TIMP would result in significant impacts on air quality. No specific construction projects would be implemented based on this EIR; rather, the transportation improvements are evaluated at a conceptual level of detail.

Impact 4.1-1: Implementation of the Proposed Project would not conflict with or obstruct implementation of the applicable air quality plan. This would be a *less than significant* impact.

The applicable air quality plans are the 2012 AQMP, the 2013-2035 RTP/SCS, and the City's General Plan, including the Air Quality Element, Mobility Plan 2035, and the Plan for a Healthy Los Angeles (Health and Wellness Element).

Generally, the 2012 AQMP, 2013-2035 RTP/SCS, and the City of Los Angeles Air Quality Element and Mobility Plan 2035, aim to minimize air quality impacts as a result of growth in the region while supporting mobility in the region. The Plan for a Healthy Los Angeles also acknowledges the relationship between public health and transportation with policies aimed at reducing air pollution through expanding public transit and active transportation modes. Potential transportation improvements related to the Proposed Project include enhancing transit service, bicycle facilities, and pedestrian accommodations to promote multi-modal transportation in the project area; roadway projects to improve intersections, safety, and traffic flow; installation of automated traffic surveillance and control systems and cameras; and trip reduction programs. The improvement projects are intended to encourage the use of alternative modes of transportation and to minimize the increase in vehicle travel in the region. The potential for construction and operation of these proposed improvements to conflict with or obstruct implementation of these plans is addressed below.

Construction

The Proposed Project would conflict with the AQMP if it were to hinder strategies intended to bring the SoCAB into compliance with federal ambient air quality standards and it would conflict with the City's Air Quality Element if it were inconsistent with the objective of reducing particulate air pollutants from construction sites.

The Proposed Project would not result in any alterations in land use and would not affect future regional development anticipated by SCAG in the 2013-2035 RTP/SCS or incorporated as assumptions in the AQMP. The proposed transportation improvements would be consistent with the regional growth anticipated by these plans. **Table 4.1-11** identifies the types of transportation improvements associated with the Proposed Project and the level of construction associated with each type. As shown in the table, the majority of the proposed improvements would result in a low level of construction activity. Projects with the greatest level of construction activity would include the addition of center-running BRT on Sepulveda Boulevard and Lincoln Boulevard; and roadway projects, such as the Lincoln Boulevard Bridge Enhancement and reconfiguring the I-10 ramps at Bundy Drive.

The emissions associated with the proposed transportation improvements would be at the low end of the intensity range of construction activities that occur in the region. As indicated in Table 4.1-11, the majority of the transportation improvements would not require substantial construction. Generally, project-related construction would take place within existing roadways, sidewalks, and right-of-ways and, with the exception of the projects identified above, would not involve construction of major new facilities or infrastructure. Rather, the majority of the projects would involve only minor construction activities, such as removal and replacement of asphalt and concrete, which would be associated with the construction of cycle tracks, sidewalk improvements, traffic calming features, and bicycle transit centers for example; restriping, which would be associated with implementation of curb-running BRT, enhanced pedestrian cross-walks, and turn-lane designations, for example; or the installation of minor new facilities, such as bus shelters, signage, streetscape improvements, and ITS equipment. Even the more notable construction projects, (i.e., the Lincoln Boulevard Bridge Enhancement, Lincoln Boulevard and Sepulveda Boulevard BRTs, and reconfiguration of the I-10 ramps at Bundy Drive), would be at a lesser intensity than many large construction projects in the region, some of which involve construction of substantial new facilities on large project sites.

The 2012 AQMP includes proposed control measures to reduce DPM and NOx emissions from off-road heavy duty diesel vehicles. In addition, SCAQMD's Rule 403 requires construction projects to control fugitive dust. All construction projects related to the proposed transportation improvements would be required to operate in compliance with these control measures and would be subject to oversight by the City's Department of Building and Safety. In addition, as discussed in Impact 4.1-2, construction emissions would not exceed SCAQMD thresholds. Therefore, construction impacts would not conflict with or obstruct implementation of the AQMP or the Air Quality Element's objective of reducing particulate air pollutants from construction sites. For these reasons, the Proposed Project would not conflict with or obstruct implementation of applicable plans with respect to construction-related air quality and the impact would be ***less than significant***.

Operations

The purpose of the 2012 AQMP is to provide updated air pollution control strategies to bring the SoCAB into compliance with various federal ambient air quality standards. The 2012 AQMP relied upon the most recent planning assumptions from jurisdictions within SoCAB, as well as SCAG's forecast assumptions based on its 2012 Regional Transportation Plan. The project would conflict with or obstruct implementation of the AQMP if it would be inconsistent with the strategies adopted for the purpose of attaining federal ambient air quality standards or if it were to conflict with the SCAG's forecast assumptions upon which the AQMP was based. With regards to other air-quality related plans, generally, a project that promotes a sustainable transportation system that emphasizes transit and non-motorized transportation and is planned in a way that increases mobility options while minimizing VMT both within the project area and the surrounding community would (1) also minimize air pollutant emissions, and (2) be consistent with the AQMP as well as the goals of the

RTP/SCS, the City's Air Quality Element, and Mobility Plan 2035. Moreover, a project that would decrease community exposure to air quality pollutants from mobile sources would be consistent with the City's Plan for a Healthy Los Angeles.

Table 4.1-11 Construction Emission Intensity

Project Type	Project Description	Construction Intensity
Transit Improvements	New center-running bus rapid transit on Sepulveda Boulevard and Lincoln Boulevard; curb-running bus rapid transit on other corridors, including enhanced stop amenities	High/Medium
	Enhance bus service through expanded service routes and frequency as well as bus stop improvements	Low
	Establish circulator/shuttles to connect activity centers to major transit centers	None
Bicycle and Pedestrian Improvements	Improve connectivity at major Metro stations (shading, lighting, directional signage, shelters, crosswalks)	Low
	Implement bicycle friendly street design as an alternate route to major corridors	Low/Medium
	Install mobility hubs near Metro stations and satellite hubs (bike parking, car/bicycle sharing)	Low
	Implement streetscape plans	Low
	Implement bicycle lanes, cycle tracks, multi-use tracks	Low/Medium
	Complete gaps in sidewalk network and provide pedestrian enhancements	Medium
	Establish bikesharing and bicycle transit centers that offer bicycle parking, rentals, repairs, lockers, showers, and transit information	Low/Medium
Roadway Projects	Turn-lane or safety improvements at major intersections	Medium
	Improve traffic flow along major arterials, including changes to lane configurations	Medium
	Widen Lincoln Boulevard Bridge	High
	Establish measures to encourage use of arterials and discourage through-traffic from using local streets	Low
	Reconfigure I-10 ramps at Bundy Drive	High
Intelligent Transportation Systems	Implement traffic signal updates as part of the automated traffic surveillance and control system that provides real-time monitoring and adjustment of signal timing	Low
	Install CCTV cameras & associated infrastructure	Low
Trip Reduction Programs	Update parking requirements, establish systems for real-time parking information	Low
	Provide guidance and implementation of travel demand management programs	None
	Develop online TDM Toolkit with information for transit users, cyclists, and pedestrians	None

Source: CDM Smith, 2015.

Key:
Low = Involves a small area (less than one acre) and minimal disturbance of the ground/existing pavement, including installation of minor new facilities.
Medium = Involves an area generally ranging from less than one acre to approximately three acres in size and requires removal and replacement of some asphalt and concrete.
High = Involves an area generally greater than one acre in size and requires construction of substantial new facilities/infrastructure.

As noted above, the Proposed Project would not result in any alterations in land use in the project area and would not affect future regional development anticipated by SCAG in the 2013-2035 RTP/SCS or incorporated as assumptions in the AQMP. The project would improve mobility in the Westside by providing more transportation options and conditions that would promote use of alternative forms of transportation, including public transit, bicycles, and walking.

As discussed in Section 4.6, *Transportation*, although the total VMT in the study area would increase due to regional growth (see **Table 4.1-12**), the Proposed Project is anticipated to reduce the project area VMT by more than 3 percent as compared to the Future without Project conditions. Specifically, peak hour VMT would decrease by 4.3 percent in the project area, off peak period VMT would decrease by 2.3 percent, and daily VMT would decrease by 3.4 percent. Moreover, per capita VMT in the project area would be 4.4 percent lower compared to existing conditions, and 3.4 percent lower than future conditions without the project.

Table 4.1-12 Vehicle Miles Traveled in the Project Area

Location	Vehicle Miles Traveled			Percent Change		
	Peak Period (7-Hour)	Off Peak Period (17-Hour)	Daily	Peak Period (7-Hour)	Off Peak Period (17-Hour)	Daily
Existing Conditions (2014)						
CTCSP	1,075,337	883,200	1,958,536	-	-	-
WLA TIMP	1,179,549	839,570	2,019,119	-	-	-
Surface Streets	**2,254,885**	**1,722,770**	**3,977,655**	**-**	**-**	**-**
Freeways (Mainline)	*792,436*	*879,696*	*1,672,132*	-	-	-
Study Area	**3,047,321**	**2,602,466**	**5,649,787**	-	-	-
Future Without Project (Comparison to Existing)						
CTCSP	1,178,199	1,009,164	2,187,362	9.6%	14.3%	11.7%
WLA TIMP	1,241,692	893,368	2,135,059	5.3%	6.4%	5.7%
Surface Streets	**2,419,891**	**1,902,531**	**4,322,422**	**7.3%**	**10.4%**	**8.7%**
Freeways (Mainline)	*876,989*	*991,068*	*1,868,056*	*10.7%*	*12.7%*	*11.7%*
Study Area	**3,296,879**	**2,893,599**	**6,190,478**	**8.2%**	**11.2%**	**9.6%**
Future With Project (Comparison to Existing)						
CTCSP	1,107,419	980,852	2,088,271	3.0%	11.1%	6.6%
WLA TIMP	1,192,318	883,875	2,076,193	1.1%	5.3%	2.8%
Surface Streets	**2,299,737**	**1,864,728**	**4,164,465**	**2.0%**	**8.2%**	**4.7%**
Freeways (Mainline)	*856,730*	*961,080*	*1,817,810*	*8.1%*	*9.3%*	*8.7%*
Study Area	**3,156,467**	**2,825,808**	**5,982,275**	**3.6%**	**8.6%**	**5.9%**
Future With Project (Comparison to Future Without Project)						
CTCSP	1,107,419	980,852	2,088,271	-6.0%	-2.8%	-4.5%
WLA TIMP	1,192,318	883,875	2,076,193	-4.0%	-1.1%	-2.8%
Surface Streets	**2,299,737**	**1,864,728**	**4,164,465**	**-5.0%**	**-2.0%**	**-3.7%**
Freeways (Mainline)	*856,730*	*961,080*	*1,817,810*	*-2.3%*	*-3.0%*	*-2.7%*
Study Area	**3,156,467**	**2,825,808**	**5,982,275**	**-4.3%**	**-2.3%**	**-3.4%**

Source: Fehr & Peers, Westside Travel Demand Forecasting Model, 2015.

With its reduction in project area VMT, and its consistency with other AQMP control measures, the project would be consistent with the goals of the 2012 AQMP.

The transportation improvements would increase mobility options and increase accessibility to alternative transportation modes. The improvements would provide for a safe, reliable, and sustainable transportation system, and protect the environment and improve public health by contributing to air quality improvements through an increase in non-motorized transportation and a reduction in VMT. Therefore, the Proposed Project would be aligned with the 2012-2035 RTP/SCS as well as relevant air quality policy objectives of the City's Air Quality Element, Plan for a Healthy Los Angeles, and Mobility Plan 2035.

By reducing per capita VMT, the proposed transportation improvements would be consistent with the City of Los Angeles General Plan Air Quality Element's goal of good air quality and mobility in an environment of continued population growth. The project would also be consistent with objectives of reducing vehicle trips, VMT, and vehicular traffic during peak periods, and providing ATSAC and other capital programs to advance regional transportation goals.

For these reasons, the Proposed Project would be consistent with the Air Quality Element of the General Plan.

As discussed above, operation of the proposed transportation improvements would not obstruct or conflict with applicable air quality plans. The impact would be ***less than significant***.

Mitigation Measures

No mitigation measures are required.

Significance of Impacts After Mitigation

Impacts related to consistency with air quality plans from the Proposed Project would be ***less than significant.***

Impact 4.1-2: Implementation of the Proposed Project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. This would be a *less than significant* impact.

Construction

Construction of the proposed transportation improvements may result in temporary increases in regional air emissions. Implementation of the transportation improvement projects would be subject to available funding collected through the proposed Transportation Improvement Assessment (TIA) Fee, which would be dependent on the rate of development within the project area, as well as funding obtained from other sources; therefore, the implementation schedules and specific designs of these transportation improvement projects are not yet available. Instead, potential regional air emissions were estimated based on anticipated construction equipment and construction-related trips, as explained in Section 4.1.4.2 above.

Regional construction emissions would be associated with construction equipment, construction-related truck trips, and worker commute trips. As shown in Table 4.1-11 above, most of the proposed transportation improvement projects would not involve substantial construction activity. **Table 4.1-13** shows the estimated daily regional construction emissions associated with construction of transportation improvement types. As shown in the table, construction of the proposed transportation improvements would not exceed the maximum daily regional construction emissions thresholds for any pollutant. Moreover, improvement projects with a low level of construction activity are estimated to result in less emissions than those presented in Table 4.1-13. As a result, the impact of the Proposed Project on air quality standards from construction activities would be ***less than significant***.

Table 4.1-13 Construction Emissions Summary

	Maximum Daily Emissions (pounds per day)					
	CO	VOC	NOx	PM10	PM2.5	SOx
Lincoln and Sepulveda BRT/I-10 Ramp Reconfiguration at Bundy	34	4.9	48	5.0	2.6	<1
Lincoln Boulevard Bridge	35	5.7	73	13	4.7	<1
Other Transportation Improvements	9	2	17	3	2	<1
Regional Construction Threshold	550	75	100	150	55	150
Significant Impact?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CDM Smith, 2015.

Note:
Emissions from different improvement projects are not additive for purposes of determining significance; rather, each individual project is compared to the regional construction threshold to determine significance.

Key:
CO = carbon monoxide
NOx = nitrogen oxides
PM10 = inhalable particulate matter
PM2.5 = fine particulate matter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

Operations

A change in vehicle operations in the study area as a result of project implementation could impact air quality in the project area. The existing (2014) daily VMT in the project area is approximately 5.6 million. As shown in Table 4.1-12, in 2035, without implementation of the Proposed Project, the daily VMT in the study area is anticipated to increase to 6.2 million, an increase of 9.6 percent over existing conditions. With implementation of the Proposed Project, daily VMT would increase to approximately 6 million, an increase of 5.9 percent over existing conditions, but a reduction of 3.4 percent compared to conditions in the future without the project. The emphasis of the proposed transportation improvements on alternative modes of transportation would result in a reduction in VMT per capita (which includes both project area residents and employees) of 4.4 percent compared to existing conditions and a reduction of 3.4 percent compared to future conditions without the project.

The total VMT in the project area under the Existing, Future with Project, and Future without Project conditions, summarized in Table 4.1-12 above, have been delineated by speed category (or speed bin, such as 5 mph, 10 mph, 15 mph). The VMT by speed bin for each scenario is presented in **Table 4.1-14**.

Table 4.1-14 Daily Vehicle Miles Traveled by Speed in the Project Area

Speed (mph)	Existing Conditions (2014)		Future Without Project		Future With Project	
5	58,230	1%	66,238	1%	85,295	1%
10	593,908	11%	658,074	11%	741,352	12%
15	1,528,036	27%	1,585,164	26%	1,506,935	25%

Speed (mph)	Existing Conditions (2014)		Future Without Project		Future With Project	
20	1,486,858	26%	1,639,537	26%	1,514,297	25%
25	823,120	15%	933,529	15%	869,071	15%
30	434,912	8%	481,913	8%	473,887	8%
35	168,231	3%	183,503	3%	169,585	3%
40	137,748	2%	116,362	2%	101,478	2%
45	257,242	5%	292,714	5%	288,404	5%
50	76,657	1%	148,838	2%	143,791	2%
55	68,110	1%	68,348	1%	69,683	1%
60	16,736	0%	16,257	0%	18,498	0%
Totals	**5,649,787**	**100%**	**6,190,478**	**100%**	**5,982,275**	**100%**

Source: Fehr & Peers, Westside Travel Demand Forecasting Model, 2015.

Operational vehicle emissions from the project area based on projected daily VMT were estimated and are presented in **Table 4.1-15**.

Table 4.1-15 Operational Emissions Summary

	Maximum Daily Emissions (pounds per day)					
	CO	VOC	NOx	PM10	PM2.5	SOx
Existing Conditions (2014)	44,616	5,160	11,468	2,531	705	85
Future Without Project (Compared to Existing)						
Future Without Project	12,369	1,627	4,801	2,543	586	56
Future Without Project Compared to Existing	*-32,247*	*-3,532*	*-6,668*	*12*	*-119*	*-29*
Regional Operational Threshold	550	55	55	150	55	150
Significant Impact?	**No**	**No**	**No**	**No**	**No**	**No**
Future With Project (Compared to Existing)						
Future With Project	12,147	1,591	4,918	2,459	567	55
Future With Project Compared to Existing	*-32,468*	*-3,568*	*-6,550*	*-72*	*-138*	*-30*
Regional Operational Threshold	550	55	55	150	55	150
Significant Impact?	**No**	**No**	**No**	**No**	**No**	**No**
Future With Project Compared to Future Without Project						
Future Without Project	12,369	1,627	4,801	2,543	586	56
Future With Project	12,147	1,591	4,918	2,459	567	55
Future With Project Compared to Future Without Project	*-222*	*-36*	*118*	*-84*	*-19*	*-1*
Regional Operational Threshold	550	55	55	150	55	150

Source: CDM Smith, 2015.

Note: Emissions generating operations include: engine running, startup, and idling for all pollutants; evaporative losses for VOC; and tire wear, brake wear, and paved road dust for PM10 and PM2.5.

Key:

CO = carbon monoxide
NOx = nitrogen oxides
PM10 = inhalable particulate matter
PM2.5 = fine particulate matter
SOx = sulfur oxides
VOC = volatile organic compounds

Although daily VMT in the study area would be higher in the future with or without the Proposed Project, emission rates per mile would be lower because of technological advances in vehicle emission control, turnover in the vehicle fleet, and new emission standards. As a result, maximum daily emissions of CO, VOC, NOx, PM10, PM2.5, and SOx with implementation of the proposed transportation improvements (i.e. Future with Project) would be lower than existing conditions and, therefore, would not exceed regional operational thresholds of significance. With implementation of the Proposed Project, impacts related to operational vehicle emissions in the study area would be ***less than significant.***

In the future, the Proposed Project would result in a decrease in daily VMT in the study area as compared to the Future without Project scenario. The decrease in VMT would provide a corresponding reduction in emissions for CO, VOC, PM10, PM2.5, and SOx. However, the speed profile of the VMT in the Future with Project scenario would be different than the speed profile associated with the Future without Project scenario. This difference in speed profiles would result in an increase in NOx emissions under the Future with Project conditions as compared to the Future without Project conditions. However, the increase would be minor and NOx emissions would remain less than significant based on the advances in vehicle emission control technologies, as discussed above.

As discussed above, impacts of the Proposed Project compared to existing (2014) conditions would not violate any air quality standard or contribute substantially to an existing or projected air quality violation and, thus, the impact would be ***less than significant***.

Mitigation Measures

No mitigation measures are required.

Significance of Impacts After Mitigation

Impacts related to violations of air quality standards from the Proposed Project would be ***less than significant.***

Impact 4.1-3: Implementation of the Proposed Project would result in a cumulatively considerable net increase of criteria pollutants for which the air basin is in nonattainment (O_3 precursors [NOx and VOC], PM10, and PM2.5) under an applicable federal or state ambient air quality standard. This would be a *less than significant* impact for operations, a *less than significant* impact for regional construction emissions, and a *significant and unavoidable* impact for localized construction emissions.

Construction

Cumulative impacts occur when the impact of one project, when added to other past, present, or reasonably foreseeable probable future projects, could cause a significant impact. In other words, although an individual project would be less than significant, the combined impacts from other projects could cause a significant impact. According to the SCAQMD (2003), projects that do not exceed the significance thresholds are generally not considered to be cumulatively significant.

As shown in Table 4.1-13, the regional construction emissions of the nonattainment pollutants (PM10, PM2.5, and O_3 precursors [NOx and VOC]) would be less than the SCAQMD significance thresholds. Therefore, regional construction emissions related to the Proposed Project would not be cumulatively considerable and the impact associated with regional construction emissions would be ***less than significant***.

However, as described in Impact 4.1-4 below, localized construction-related peak daily particulate emissions associated with the Lincoln Boulevard Bridge Enhancement (PM10 and PM2.5), the Lincoln Boulevard and Sepulveda Boulevard BRTs (PM10), and the I-10 Ramp Reconfiguration at Bundy Drive improvements (PM10) would be significant. Therefore, localized construction emissions would be cumulatively considerable. This would be a ***significant impact***.

Operations

Operation of the proposed transportation improvements would result in a decrease in emissions of the nonattainment pollutants PM10, PM2.5, and O_3 precursors (NOx and VOC) compared to existing conditions, as discussed above and shown in Table 4.1-15. In addition, the Proposed Project would reduce VMT in the project area in the future as compared to future conditions without the Proposed Project, with a resulting decrease in all pollutants. Therefore, the operation of the Proposed Project would not be cumulatively considerable. This impact would be ***less than significant.***

Mitigation Measures

Mitigation Measures (MM) MM-AQ-1, MM-AQ-2, and MM-AQ-3, identified in association with Impact 4.1-4 below, would reduce localized construction emissions associated with the Lincoln Boulevard Bridge Enhancement, the Lincoln Boulevard and Sepulveda Boulevard BRTs, and the I-10 Ramp Reconfiguration at Bundy Drive improvements.

Significance of Impacts After Mitigation

Construction

The Proposed Project's regional emission impacts related to cumulatively considerable contributions to air quality pollution would be ***less than significant***.

Mitigation Measures MM-AQ-1, MM-AQ-2, and MM-AQ-3, identified in association with Impact 4.1-4 below, would reduce construction emissions associated with the Lincoln Boulevard Bridge Enhancement, Lincoln Boulevard and Sepulveda Boulevard BRTs, and reconfiguration of the I-10 ramps at Bundy Drive. However, even with implementation of these measures, it is anticipated that localized construction impacts, specifically PM10 and PM2.5 from the Lincoln Boulevard Bridge Enhancement, and PM10 from the Lincoln Boulevard and Sepulveda Boulevard BRTs and the I-10 Ramp Reconfiguration at Bundy Drive, would remain ***significant and unavoidable***. The localized construction impacts from the other transportation improvements associated with the Proposed Project would be ***less than significant***.

Operation

The Proposed Project's operational impacts related to cumulatively considerable contributions to air quality pollution would be ***less than significant***.

Impact 4.1-4: Implementation of the Proposed Project would expose sensitive receptors to substantial pollutant concentrations. This would be a *less than significant* impact for operations and a *significant and unavoidable temporary* impact for construction.

Construction

Construction activities would result in emissions of criteria pollutants and TACs. Impacts associated with construction-related criteria pollutant emissions, as evaluated using SCAQMD's LST methodology, and TAC emissions are evaluated below.

Criteria Pollutants

Localized effects from daily emissions associated with implementation of the proposed transportation improvements were evaluated at sensitive receptor locations in accordance with SCAQMD's LST methodology. The SCAQMD LST analysis was conducted to evaluate the peak daily onsite construction emissions. **Table 4.1-16** shows the onsite localized construction emissions for the combined Lincoln Boulevard and Sepulveda Boulevard BRT construction (which also is used to represent impacts associated with the I-10 Ramp Reconfiguration at Bundy Drive), **Table 4.1-17** shows the onsite localized construction emissions for the proposed Lincoln Boulevard Bridge Enhancement construction, and **Table 4.1-18** shows the onsite localized construction emissions for other transportation improvements. As shown in Table 4.1-18, onsite localized construction emissions from the majority of the transportation improvements would not exceed the LSTs. However, localized PM10 and PM2.5 emissions from the Lincoln Boulevard Bridge Enhancement, and localized PM10 emissions from the Lincoln Boulevard and Sepulveda Boulevard BRTs and from the I-10 Ramp Reconfiguration at Bundy Drive, could exceed the LST thresholds, due to the potential proximity of these improvements to sensitive receptors. These localized emissions would be from a combination of fugitive dust and engine exhaust. The localized construction peak daily emissions would be significant for PM10 and PM2.5 from the Lincoln Boulevard Bridge Enhancement, and for PM10 from the Lincoln Boulevard and Sepulveda Boulevard BRTs and the I-10 Ramp Reconfiguration at Bundy Drive. This would be a potentially ***significant impact***.

Table 4.1-16 Lincoln Boulevard/Sepulveda Boulevard BRT Construction LST Analysis

Year	On-Site Maximum Daily Emissions (pounds per day)					
	CO	VOC	NOx	PM10	PM2.5	SOx
Lincoln/Sepulveda BRTs Engine Exhaust	31	4.6	45	2.1	1.9	<1
Lincoln/Sepulveda BRTs Fugitive Dust	N/A	N/A	N/A	2.8	0.6	N/A
Lincoln/Sepulveda BRTs Total Onsite	**31**	**4.6**	**45**	**4.9**	**2.5**	**<1**
Localized Significance Threshold	562	N/A	103	4	3	N/A
Significant Impact?	**No**	**No**	**No**	**Yes**	**No**	**No**

Source: CDM Smith, 2015.

Note: For purposes of this analysis, the construction LST analysis conducted for the Lincoln Boulevard and Sepulveda Boulevard BRTs is considered to be representative of construction of the I-10 Ramp Reconfiguration at Bundy Drive.

Key:
CO = carbon monoxide
N/A = not applicable
NOx = nitrogen oxides
PM10 = inhalable particulate matter
PM2.5 = fine particulate matter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

Table 4.1-17 Lincoln Boulevard Bridge Enhancement Construction LST Analysis

Year	On-Site Maximum Daily Emissions (pounds per day)					
	CO	VOC	NOx	PM10	PM2.5	SOx
Lincoln Blvd Bridge Engine Exhaust	29	4.9	51	2.5	2.3	<1
Lincoln Blvd Bridge Fugitive Dust	N/A	N/A	N/A	10	2.1	N/A
Lincoln Blvd Bridge Total Onsite	**29**	**4.9**	**51**	**13**	**4.4**	**<1**
Localized Significance Threshold	562	N/A	103	4	3	N/A
Significant Impact?	**No**	**No**	**No**	**Yes**	**Yes**	**No**

Source: CDM Smith, 2015.

Key:
CO = carbon monoxide
N/A = not applicable
NOx = nitrogen oxides
PM10 = inhalable particulate matter
PM2.5 = fine particulate matter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

Table 4.1-18 Other Transportation Improvements Construction LST Analysis

Year	On-Site Maximum Daily Emissions (pounds per day)					
	CO	VOC	NOx	PM10	PM2.5	SOx
Other Transportation Improvements	8	2	16	3	2	<1
Localized Significance Threshold	562	N/A	103	4	3	N/A
Significant Impact?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CDM Smith, 2015.

Key:
CO = carbon monoxide
N/A = not applicable
NOx = nitrogen oxides
PM10 = inhalable particulate matter
PM2.5 = fine particulate matter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

Toxic Air Contaminants

The greatest potential for TAC emissions during construction would be DPM emitted from heavy-duty diesel powered equipment. DPM is the engine exhaust particulate matter from diesel engines and equipment and is a component of PM10 and PM2.5. Construction activity would vary in location and duration but, for most of the transportation improvements, would generally occur only for a few days in the immediate vicinity of a sensitive receptor. The majority of the proposed transportation improvement projects are anticipated to have low intensity and, therefore, exposure to DPM and other TACs is anticipated to be low. The LSTs do not include a threshold for DPM. However, as shown in Tables 4.1-16, 4.1-17 and 4.1-18, the component of the PM10 and PM2.5 emissions from onsite engine exhaust would be at or lower than the respective LST thresholds. Since DPM emissions are a component of PM10 and PM2.5, it can be expected that DPM emissions would be typical for urban environments in the study area. Nevertheless, based on findings that children may be substantially more susceptible than adults to health impacts caused by exposure to DPM and other TACs (OEHHA, 2001), as well as OEHHA's recently adopted methodology for estimating risk, the transportation improvements with higher use of heavy diesel equipment, including the Lincoln Boulevard and Sepulveda Boulevard BRTs, the Lincoln Boulevard Bridge Enhancements, and reconfiguration of the I-10 ramps at Bundy Drive could generate emissions that would exceed the SCAQMD thresholds for TACs (maximum incremental cancer risk of 10 in one million, cancer burden of 0.5 excess cancer cases, or an incremental chronic or acute hazard index of 1.0). In the absence of detailed project information about these improvements, it is assumed that TAC emissions related to construction of these high construction intensity improvements would be a potentially ***significant***

impact. The impacts from the other transportation improvements associated with the Proposed Project on ambient concentrations at sensitive receptors would be ***less than significant***.

Operations

Operation of the proposed transportation improvements would result in emissions of criteria pollutants and TACs from mobile sources (i.e., MSAT). Impacts associated with operational criteria pollutant emissions and MSAT emissions are evaluated below.

Although the study area VMT is anticipated to grow in the future (see Table 4.1-12), as shown in Table 4.1-15, operational emissions of all criteria pollutants in the Future with Project scenario would be lower than present levels as a result of vehicle emission control technologies. These same technologies are projected to reduce annual MSAT emissions by over 80 percent from 2010 to 2050 (FHWA, 2012). Local conditions may differ from USEPA's 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 are likely to be lower in the future in virtually all locations. Furthermore, future levels of all pollutants, except NOx, would be lower with the Proposed Project than without the project. As a result, operations associated with the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations. Impacts from operations would be ***less than significant.***

Mitigation Measures

The following mitigation measures would apply to projects that are determined to result in significant construction-related impacts based on project-level analysis. It is assumed that these measures will be applicable to the Lincoln Boulevard Bridge Enhancement, the Lincoln Boulevard and Sepulveda Boulevard BRTs, and the I-10 Ramp Reconfiguration at Bundy Drive.

Mitigation Measure (MM)-AQ -1: Tier 3 Emission Standards and Diesel Particulate Filters. All off-road diesel-powered construction equipment greater than 50 horsepower shall meet USEPA Tier 3 emission standards when used during construction of the Lincoln Boulevard and Sepulveda Boulevard BRTs, Lincoln Boulevard Bridge Enhancement, reconfiguration of the I-10 ramps at Bundy Drive, and other projects that are demonstrated to result in significant impacts by project-specific modeling. If the contractor can demonstrate that a specific piece of Tier 3 equipment cannot be reasonably obtained, the contractor shall use equipment that meets USEPA Tier 2 emission standards and be equipped with a CARB-verified Diesel Emissions Control Strategies (VDECS).

MM-AQ-2: Fugitive Dust Control. In order to ensure compliance with, or exceedance of, the requirements associated with SCAQMD Rule 403, construction activities shall include watering disturbed soil at least 3 times daily, or as often as necessary to maintain or exceed a soil moisture content of approximately 12 percent. Additional steps shall be taken, if necessary, to stabilize disturbed soil and stock piles to eliminate visible dust emissions.

MM-AQ-3: Construction Electricity. Electricity for construction activities shall be obtained from power poles or portable diesel-fueled generators using "clean burning diesel" fuel and exhaust emission controls.

Significance of Impacts After Mitigation

Construction

Mitigation Measures MM-AQ-1, MM-AQ-2, and MM-AQ-3 would reduce localized construction emissions associated with the Lincoln Boulevard Bridge Enhancement, Lincoln Boulevard and Sepulveda Boulevard BRTs, and reconfiguration of the I-10 ramps at Bundy Drive. However, even with implementation of these measures, it is anticipated that localized construction emissions, specifically PM10 and PM2.5 from the Lincoln Boulevard Bridge Enhancement, and PM10 from the Lincoln Boulevard and Sepulveda Boulevard BRTs and the I-10 Ramp Reconfiguration at Bundy Drive, could result in construction concentration impacts that would remain ***significant and unavoidable***. In addition, it is anticipated that TAC emissions from these project would remain ***significant and unavoidable***. Impacts associated with localized construction emissions and TAC emissions from the other transportation improvements associated with the Proposed Project on ambient concentrations at sensitive receptors would be ***less than significant***.

Operation

The Proposed Project's operational impacts related to pollutant concentrations would be ***less than significant***.

Impact 4.1-5: Implementation of the Proposed Project would not create objectionable odors affecting a substantial number of people. This would be a *less than significant* impact.

Construction

The use of diesel equipment during construction may generate near-field odors that are considered to be a nuisance. Diesel equipment emits a distinctive odor that may be considered offensive to certain individuals. Construction activities would be temporary and short in duration, and odors from diesel exhaust are not anticipated to affect a substantial number of people. These odors would be similar to those resulting from typical construction that occurs in the project area. Impacts associated with odors during construction would be ***less than significant***.

Operations

The Proposed Project would not result in any alterations in land use, therefore, the only source of operational odors would be from vehicles and transit facilities. SCAQMD does not identify mobile sources as a significant source of odors. Therefore, operation of the Proposed Project would not create objectionable odors and the impact would be ***less than significant***.

Mitigation Measures

No mitigation measures are required.

Significance of Impacts After Mitigation

The Proposed Project's impacts related to odors would be ***less than significant***.