3.3 AIR QUALITY

This section of the 2024 PEIR describes air quality within the SCAG region, sets forth the regulatory framework that affects air quality, and analyzes the potential impacts of Connect SoCal 2024. In addition, this PEIR provides regional-scale mitigation measures as well as project-level mitigation measures that can and should be considered and implemented by lead agencies for subsequent, site-specific environmental review to reduce identified impacts as appropriate and feasible. Wind-related erosion as relates to loss of topsoil is addressed in Section 3.2, *Agriculture and Forestry Resources*, of this 2024 PEIR. Additional discussion of ozone as relates to global warming is provided in Section 3.8, *Greenhouse Gas Emissions*, as well as discussion of wildfire impacts in Section 3.20, *Wildfire*.

DEFINITIONS

- *Air Dispersion*. Air dispersion is defined as how air pollutants travel through ambient air. Toxic air contaminants/mobile source air toxics (TAC/MSAT) impact those located closest to the emission sources more than those located further away. A California law passed in 2003 (Public Resources Code Section 21151.8) prohibits the siting of a school within 500 feet of a freeway unless "the school district determines, through analysis based on appropriate air dispersion modeling, that the air quality at the proposed site is such that neither short-term nor long-term exposure poses significant health risks to pupils." The U.S. Environmental Protection Agency (USEPA) has issued a number of regulations that will dramatically decrease MSATs through cleaner fuels and cleaner engines.
- *Concentrations*. The amount of pollutant material per volumetric unit of air, measured in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). The following discussion identifies the pollutants included in this analysis.
- *Criteria Pollutants*. Criteria air pollutants are defined as pollutants for which the federal and State governments have established ambient air quality standards for outdoor concentrations. The federal and State standards have been set at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include carbon monoxide (CO), ozone (O3), nitrogen dioxide (NO2), sulfur dioxide (SO2), particulate matter 2.5 microns or less in diameter (PM2.5), particulate matter ten microns or less in diameter (PM10), and lead (Pb). These pollutants are discussed below (USEPA 2023i):
  - *Carbon monoxide (CO)* is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. It is emitted primarily from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, automobile exhaust accounts for the majority of emissions. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient concentrations generally follow the spatial and temporal distributions of vehicular traffic. Concentrations are influenced by local meteorological conditions; primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February. Inversions are an atmospheric condition in which a layer of warm air traps cooler air near the surface of the earth, preventing the normal rising of surface air. The highest concentrations occur during the colder months of the year when inversion conditions are more frequent. CO is a health concern because it competes with oxygen, often replacing it in the blood and reducing the blood's ability to transport oxygen to vital organs. Excess CO exposure can lead to dizziness, fatigue, and impair central nervous system functions (USEPA 2023b).

- *Ozone (O3)* is a colorless gas that is formed in the atmosphere when reactive organic gases (ROG) and nitrogen oxides (NOx) react in the presence of ultraviolet sunlight. Ozone is not a primary pollutant; rather, it is a secondary pollutant formed by complex interactions of two pollutants directly emitted into the atmosphere. The primary sources of ROG and NOx, the components of ozone, are automobile exhaust and industrial sources. Meteorology and terrain play major roles in ozone formation. Ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. The greatest source of smog-producing gases is the automobile. Short-term exposure (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes (USEPA 2023f).
- *Nitrogen dioxide (NO2)* like ozone, is not directly emitted into the atmosphere but is formed by an atmospheric chemical reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO2 are collectively referred to as NOx and are major contributors to ozone formation. NO2 also contributes to the formation of PM10. High concentrations of NO2 can cause breathing difficulties and result in a brownish-red cast to the atmosphere with reduced visibility. There is some indication of a relationship between NO2 and chronic pulmonary fibrosis. Some increase of bronchitis in children (2-3 years old) has been observed at concentrations below 0.3 ppm (USEPA 2023d).
- *Sulfur dioxide (SO2)* is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Main sources of SO2 are coal and oil used in power plants and industries. Generally, the highest levels of SO2 are found near large industrial complexes. In recent years, SO2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO2 and limits on the sulfur content of fuels. SO2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO2 can also yellow plant leaves and erode iron and steel (USEPA 2023l).
- *Particulate matter (PM)* consists of small liquid and solid particles floating in the air, including smoke, soot, dust, salts, acids, and metals and can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. Fine particulate matter, or PM2.5, is roughly 1/28 the diameter of a human hair and results from fuel combustion (e.g., motor vehicles, power generation, industrial facilities), residential fireplaces, and wood stoves. In addition, PM2.5 can be formed in the atmosphere from gases such as SO2, NOx, and VOC. Inhalable particulate matter, or PM10, is about 1/7 the thickness of a human hair. Major sources of PM10 include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions.

  PM2.5 and PM10 pose a greater health risk than larger-size particles. When inhaled, they can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM2.5 and PM10 can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances, such as lead, sulfates, and nitrates can cause lung damage directly. These substances can be absorbed into the blood stream and cause damage elsewhere in the body. These substances can transport absorbed gases, such as chlorides or ammonium, into the lungs and cause injury. Whereas PM10 tends to collect in the upper portion of the respiratory system, PM2.5 is so tiny that it can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility (USEPA 2023j).

- *Lead (Pb)* in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturers of batteries, paint, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase-out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95 percent. With the phase-out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities have become lead-emission sources of greater concern.

  Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth (USEPA 2023c).

- *Toxic air contaminants (TAC)* are airborne pollutants that may increase a person's risk of developing cancer or other serious health effects. TACs include more than 700 chemical compounds that are identified by State and federal agencies based on a review of available scientific evidence. In California, TACs are identified through a two-step process established in 1983 that includes risk identification and risk management (OEHHA 2023a).

- *Diesel Particulate Matter (DPM)*. According to the California Air Resources Board (CARB), most toxic air emissions are from motor vehicles and the particulate matter from the exhaust of diesel-fueled engines (CARB 2023e). In 1998, the California Office of Environmental Health Hazard Assessment (OEHHA) completed a comprehensive health assessment of diesel exhaust. This assessment formed the basis for a decision by CARB to formally identify particles in diesel exhaust as a TAC that may pose a threat to human health (OEHHA 2023b).

  DPM is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is commonly found throughout the environment and is estimated by USEPA's National Scale Assessment to contribute to the human health risk in New England. Diesel exhaust is composed of two phases, either gas or particle, and both phases contribute to the risk. The gas phase is composed of many of the urban hazardous air pollutants, such as acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, and polycyclic aromatic hydrocarbons. The particle phase also has many different types of particles that can be classified by size or composition. The size of diesel particulates that are of greatest health concern are those that are in the categories of fine, and ultra-fine particles. The composition of these fine and ultrafine particles may be composed of elemental carbon with absorbed compounds such as organic compounds, sulfate, nitrate, metals, and other trace elements. Diesel exhaust is emitted from a broad range of diesel engines: the on-road diesel engines of trucks, buses, and cars and the off-road diesel engines that include locomotives, marine vessels, and heavy-duty equipment (USEPA 2014a). People living and working in urban and industrial areas are more likely to be exposed to this pollutant. Those spending time on or near roads and freeways, truck loading and unloading operations, operating diesel-powered machinery, or working near diesel equipment face exposure to higher levels of diesel exhaust and face higher health risks (OEHHA 2023b).

  The most common exposure pathway is breathing the air that contains the DPM. The fine and ultrafine particles are respirable, which means that they can avoid many of the human respiratory system defense mechanisms and enter deeply into the lung. In the National Scale Assessment, there are several steps used to characterize public health risks. For diesel particulate matter, not all of the steps could be completed but a qualitative assessment was provided that provided modeling estimates of population exposures. The estimated population exposure concentrations for diesel particulate matter were the highest exposure concentrations in all of the New England states. USEPA has medium confidence in the

overall NATA estimate for diesel particulate exposure based on the emissions and exposure modeling. Exposure to DPM comes from both on road and off-road engine exhaust that is either directly emitted from the engines or aged through lingering in the atmosphere (USEPA 2014a).

Diesel exhaust causes health effects from both short-term or acute exposures and also long-term chronic exposures, such as repeated occupational exposures. The type and severity of health effects depends upon several factors including the amount of chemical you are exposed to and the length of time you are exposed. Individuals also react differently to different levels of exposure. There is limited information on exposure to just diesel particulate matter but there is enough evidence to indicate that inhalation exposure to diesel exhaust causes acute and chronic health effects (USEPA 2014a).

Acute exposure to diesel exhaust may cause irritation to the eyes, nose, throat, and lungs and some neurological effects such as lightheadedness. Acute exposure may also elicit a cough or nausea as well as exacerbate asthma. Chronic exposure in experimental animal inhalation studies have shown a range of dose-dependent lung inflammation and cellular changes in the lung, and there are also diesel exhaust immunological effects. Based upon human and laboratory studies, there is considerable evidence that diesel exhaust is a likely carcinogen. Human epidemiological studies demonstrate an association between diesel exhaust exposure and increased lung cancer rates in occupational settings (USEPA 2014a). The elderly and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to fine-particle pollution. Numerous studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks and premature deaths among those suffering from respiratory problems. Because children's lungs and respiratory systems are still developing, they are also more susceptible than healthy adults to fine particles. Exposure to fine particles is associated with increased frequency of childhood illnesses and can also reduce lung function in children. For the average Californian, 70 percent of cancer risk from breathing toxic air pollutants stem from diesel exhaust particles (OEHHA 2023b).

USEPA's National Scale Assessment uses several types of health hazard information to provide a quantitative "threshold of concern" or a health benchmark concentration at which it is expected that no adverse health effects occur at exposures to that level. Health effects information on carcinogenic, short- and long term non-carcinogenic end points are used to establish selective protective health levels to compare to the modeled exposures levels. The exposure response data in human studies are considered too uncertain to develop a carcinogenic unit risk for USEPA's use. There is a Reference Concentration (RFC) that is used as a health benchmark protective of chronic noncarcinogenic health effects, but it is for diesel exhaust and not specifically set for DPM, which is what was modeled in NATA. The RFC for diesel exhaust, which includes DPM is 5 µg/m^3. This value is similar to the National Ambient Air Quality Standard established for fine particulate matter, which is 15 µ/m^3 (USEPA 2014a).

- *Emissions*. The quantity of pollutants released into the air, measured in pounds per day (lbs/day) or tons per day (tpd).
- *Greenhouse gases (GHG)*. Components of the atmosphere that contribute to the greenhouse effect. The principal greenhouse gases that enter the atmosphere because of human activities are carbon dioxide, methane, nitrous oxide, and fluorinated gases.
- *Visibility*. With the exception of Lake County, which is designated in attainment, all of the air districts in California are currently designated as unclassified with respect to the California Ambient Air Quality Standards (CAAQS) for visibility reducing particles. A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.

  Since deterioration of visibility is one of the most obvious manifestations of air pollution and plays a major role in the public's perception of air quality, the state of California has adopted a standard for

visibility or visual range. Until 1989, the standard was based on visibility estimates made by human observers. The standard was changed to require measurement of visual range using instruments that measure light scattering and absorption by suspended particles. The visibility standard is based on the distance that atmospheric conditions allow a person to see at a given time and location. Visibility reduction from air pollution is often due to the presence of sulfur and nitrogen oxides, as well as particulate matter. Visibility degradation occurs when visibility reducing particles are produced in sufficient amounts such that the extinction coefficient is greater than 0.23 inverse kilometers (to reduce the visual range to less than 10 miles) at relative humidity less than 70 percent, 8-hour average (from 10 a.m. to 6 p.m.) according to the state standard.

3.3.2 ENVIRONMENTAL SETTING

The six-county SCAG region encompasses 38,000 square miles of area (almost 25 million acres) and is home to approximately 18.8 million people as of 2019, making it the largest and most diverse region in the U.S (U.S. Census Bureau 2023).

Air quality in the four air basins in the SCAG region—South Coast Air Basin (SCAB), Mojave Desert Air Basin (MDAB), Salton Sea Air Basin (SSAB), and South Central Coast Air Basin (SCCAB) (Ventura County portion)—is a function of the topography, climate, population, and land use. While improved from the 1970s, Southern California consistently ranks as some of the worst air quality in the nation. The American Lung Association's State of the Air Report 2023 ranks the Los Angeles-Long Beach metropolitan area as ninth worst in the nation for people at risk for 24-hour PM2.5, fourth worst for annual PM2.5, and worst for most ozone-polluted cities (American Lung Association 2023a).

TOPOGRAPHY, CLIMATE, AND METEOROLOGY

The SCAG region has a greatly varied topography from lakes to mountains, valleys, hills, basins, and urban areas. The topography and meteorological conditions define the climate of the region because air quality is a function of the rate and location of pollutant emissions. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients, along with local topography, influence the movement and dispersal of pollutants and thereby provide the link between air pollutant emissions and air quality. Southern California has strong temperature inversions in the lower atmosphere that can trap pollutants near the surface. Meteorology affects air quality trends that may mask emission reduction benefits. Meteorology also affects different pollutants differently. Warm and sunny weather, which is typical of Southern California, leads to higher ozone days because sunlight aids the chemical reactions that form ozone. On the other hand, windy weather will spread primary particulate matter from direct emissions leading to high PM concentrations in the air. Secondary PM, including particulate nitrates and sulfates, is more prevalent in the air during cold, calm, and humid weather conditions. Rain and wind reduce PM concentration in the air (CARB 2013). The local topography and climate conditions are described in greater detail specific to each air basin as listed below. These air basins are geographically defined because the travel of air pollution can be trapped by natural barriers like mountains unless the prevailing winds are powerful enough to disperse it to other areas (SCAQMD 2023c).

SOUTH COAST AIR BASIN

The SCAB incorporates approximately 12,000 square miles, consisting of Orange County and the urbanized areas of San Bernardino, Riverside, and Los Angeles Counties. In May 1996, the boundaries of the SCAB were changed by CARB to include the Beaumont-Banning area. The distinctive climate of the SCAB is

determined by its terrain and geographic location. The SCAB is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the southwest and high mountains around the rest of its perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The usually mild climatological pattern is interrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds (SCAQMD 1993).

The vertical dispersion of air pollutants in the SCAB is hampered by the presence of persistent temperature inversions. High-pressure systems, such as the semi-permanent high-pressure zone in which the SCAB is located, are characterized by an upper layer of dry air that warms as it descends, restricting the mobility of cooler marine-influenced air near the ground surface, and resulting in the formation of subsidence inversions. Such inversions restrict the vertical dispersion of air pollutants released into the marine layer and, together with strong sunlight, can produce worst-case conditions for the formation of photochemical smog. The basin-wide occurrence of inversions at 3,500 feet above sea level or less averages 191 days per year (SCAQMD 1993).

The atmospheric pollution potential of an area is largely dependent on winds, atmospheric stability, solar radiation, and terrain. The combination of low wind speeds and low inversions produces the greatest concentration of air pollutants. On days without inversions, or on days of winds averaging over 15 miles per hour, smog potential is greatly reduced (SCAQMD 1993).

MOJAVE DESERT AIR BASIN

The MDAB encompasses approximately 21,480 square miles and includes the desert portions of San Bernardino County, Palo Verde Valley, Palmdale, and Lancaster in the Antelope Valley. The MDAB is bordered by the SCAB and the Riverside County line to the south, Kern County line to the west, the Arizona and Nevada borders to the north and east, and the eastern portion of Riverside County to the southeast (CARB 2014). The Kern County portion of MDAB is not in the SCAG region.

The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes (MDAQMD 2016a). Many of the lower mountains that dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada Mountains to the north; air masses pushed onshore in Southern California by differential heating are channeled through the MDAB. The MDAB is separated from the Southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses. The Antelope Valley is bordered in the northwest by the Tehachapi Mountains, separated from the Sierra Nevada in the north by the Tehachapi Pass (3,800 feet elevation). The Antelope Valley is bordered in the south by the San Gabriel Mountains, bisected by Soledad Canyon (3,300 feet). The Mojave Desert is bordered in the southwest by the San Bernardino Mountains, separated from the San Gabriel Mountains by the Cajon Pass (4,200 feet). A lesser channel lies between the San Bernardino Mountains and the Little San Bernardino Mountains (the Morongo Valley).

The Palo Verde Valley portion of the Mojave Desert lies in the low desert, at the eastern end of a series of valleys (notably the Coachella Valley) whose primary channel is the San Gorgonio Pass (2,300 feet) between the San Bernardino and San Jacinto Mountains.

During the summer, the MDAB is generally influenced by a Pacific subtropical high cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold

air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time the reach the desert. Most desert moisture arrives from infrequent warm, moist, and unstable air masses from the south. The MDAB averages between 3 and 7 inches of precipitation per year (from 16 to 30 days with at least 0.01 inch of precipitation) (County of Riverside 2018). The MDAB is classified as a dry-hot desert climate, with portions classified as dry-very hot desert, to indicate at least three months have maximum average temperatures over 100.4 degrees Fahrenheit (°F).

SALTON SEA AIR BASIN

The SSAB includes Imperial County and the desert portion of Riverside County between the SCAB and the MDAB (known as the Coachella Valley). Imperial County extends over 4,284 square miles in the southeastern corner of California, bordering on Mexico to the south, Riverside County to the north, San Diego County on the west, and the State of Arizona on the east. The Salton Trough runs northwest to southeast through the center of Imperial County and extends into Mexico. The elevation in Imperial County ranges from about 230 feet below sea level at the Salton Sea in the north to more than 2,800 feet on the mountain summits to the east (ICAPCD 2017b).[1]

Climatic conditions in the SSAB are governed by the large-scale sinking and warming of air in the semi-permanent subtropical high-pressure center of the Pacific Ocean. The high-pressure ridge blocks out most mid-latitude storms except in the winter when the high is weakest and farthest south. The coastal mountains prevent the intrusion of any cool, damp marine air found in California coastal environs. Because of the weakened storms and the orographic barrier, the SSAB experiences clear skies, very low humidity, extremely hot summers, mild winters, and little rainfall. The flat terrain of the valley and the strong temperature differentials created by intense solar heating produce moderate winds and deep thermal convection (ICAPCD 2017b).

The combination of subsiding air, protective mountains, and distance from the ocean severely limits precipitation. Rainfall is highly variable, with heavy precipitation occurring from single storms followed by periods of dry air. Humidity is typically low throughout the year, ranging from 28 percent in summer to 52 percent in winter (ICAPCD 2017b).

The wind in Imperial County follows two general patterns. Prevailing winds are from the west-northwest through southwest. Also evident is a secondary flow maximum from the southeast. The prevailing winds from the west and northwest occur seasonally from fall through spring and are known to be from the Los Angeles area. Imperial County experiences periods of extremely high wind speeds. Wind speeds can exceed 31 miles per hour, and this occurs primarily during April and May. However, wind speeds of less than 6.8 miles per hour account for more than half of the observed wind measurements (ICAPCD 2017b).

SOUTH CENTRAL COAST AIR BASIN

The SCAG region includes the Ventura County portion of the SCCAB. Ventura County is made up of coastal mountain ranges, the coastal shore, the coastal plain, and several inland valleys (VCAPCD 2022). The northern half of the county (Los Padres National Forest) is extremely mountainous with altitudes up to 8,800 feet. Consequently, the climate in the northern half of the county varies a great deal depending on elevation. Therefore, the climatological and meteorological description presented for Ventura County focuses on the

[1] Note that CARB adopted the 2018 Updates to the SIP, which updated the 2011 baseline emissions inventory for Imperial County, but this document was used to provide details for the SSAB environmental setting.

southern half of the county where violations of federal and state ozone standards occur. In the winter, low-pressure systems originating in the northern Pacific Ocean bring clouds, rain, and wind into Ventura County.

The average annual temperature in the coastal and inland valleys of the southern half of Ventura County ranges from the upper 50s at the coast (Point Mugu) to the mid-60s in Simi Valley. The difference between the maximum and minimum temperatures becomes greater as the distance increases from the coast. The average minimum and maximum temperatures at Point Mugu are 50°F and 60°F, respectively, while at the inland location of Simi Valley, the averages are 52°F and 77°F. The smaller range of temperatures at Point Mugu demonstrates the moderating influence of the ocean on air temperature. The ocean's ability to warm and cool the air while its temperature remains relatively unchanged produces the moderating effect. Inland area temperatures are more prone to rapid fluctuations. Almost all rainfall in Ventura County falls during the winter and early spring (November through April). Summer rainfall is normally restricted to scattered thundershowers in lower elevations and somewhat heavier activity in the mountains. Humidity levels vary throughout the County. The range of humidity is primarily influenced by proximity to the ocean. Although the County's climate is semiarid, average humidity levels are relatively high due to the marine influence. Coastal areas are more humid than inland areas during typical fair weather. The reverse is true during stormy periods. The lowest humidity levels are recorded during Santa Ana wind conditions.

Ventura County winds are dominated by a diurnal land-sea breeze cycle. The land-sea breeze regime is broken only by occasional winter storms and infrequent strong northeasterly Santa Ana wind flows. Since the sea breeze is stronger than the land breeze, the net wind flow during the day is from west to east. Under light land-sea breeze regimes, recirculation of pollutants can occur as emissions move westward during morning hours, and eastward during the afternoon. This can cause a buildup of pollutants over several days.

The vertical dispersion of air pollutants in Ventura County is limited by the presence of persistent temperature inversions. Approximately 60 percent of all inversions measured at Point Mugu are surface based, with most occurring during the morning hours.

REGIONAL AIR QUALITY

In Southern California, the American Lung Association consistently gives counties within the SCAG region failing grades in the amount of ozone and particulate pollution in the air. The American Lung Association has assigned grades to each of the counties in the SCAG region for 2023 (**Table 3.3-1, American Lung Association Report Card for SCAG Region**). Grades were calculated from a weighted average based on the total number of days in each air quality index level. The weighted average was derived by counting the number of days in each unhealthful range in each year, multiplying the total in each range by the assigned standard weights, and calculating the average. All six counties in the SCAG region received a failing grade for ozone, which means there were a significant number of unhealthy air days relative to the ozone standard. For ozone, an "F" grade was set to generally correlate with the number of unhealthy air days that would place a county in nonattainment for the ozone standard. For short-term particle pollution, fewer unhealthy air days are required for an F than for nonattainment under the PM2.5 standard. For PM2.5, the national standard allows 2 percent of days in a three-year period to exceed 35 µg/m^3, which is roughly 21 unhealthy days in three years, but the American Lung Association uses a more restrictive 1 percent or 99th percentile limit to protect the public from short term spikes in pollution.

TABLE 3.3-1 **American Lung Association Report Card for SCAG Region**

COUNTY	OZONE GRADE	PARTICLE POLLUTION GRADE
Imperial	F	D
Los Angeles	F	F
Orange	F	F
Riverside	F	F
San Bernardino	F	F
Ventura	F	D

Source: American Lung Association 2023a

PARTICLE POLLUTION

Particle pollution results from a variety of sources including fuel combustion (e.g., motor vehicles, power generation, industrial facilities); residential fireplaces and wood stoves; crushing or grinding operations; dust stirred up by vehicles traveling on roads; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; atmospheric chemical and photochemical reactions; and windblown dust from open lands. Windblown dust typically results from sources including agricultural operations; grading of previously covered or vegetated areas without reapplication of cover; vegetation or dust suppressants; and re-entrained dust from previously settled dust on solar panels. In addition, as discussed in Section 3.7, *Geology and Soils*, of this 2024 PEIR, human activities associated with development such as grading, particularly on slopes, increase the risk for soil erosion in affected areas where soil erosion and loss of topsoil are concerns in the context of air quality as it increases the risks of dust storms.

In December 2009, the USEPA linked fine particle pollution (PM2.5) to public health impacts. The USEPA determined that fine particle pollution could cause early death, cardiovascular harm, respiratory harm, cancer, and reproductive and developmental harm. In the short term, particle pollution reduces lung function and increases lung tissue inflammation in young, healthy adults. Short-term exposure increases emergency room visits for patients with acute respiratory illnesses, increases number of heart attacks, increases school absenteeism, increases hospitalization of children with asthma, and can even result in deaths on days of high levels of particle pollution (American Lung Association 2023b). Asthma in the SCAG region ranges from 28 to 80 per 10,000 people (**Table 3.3-2, Population-Weighted Asthma Rate per 10,000**). Asthma rates are a good indicator of population sensitivity to environmental stressors because asthma is both caused by and exacerbated by pollutants.

In 2014, the World Health Organization's International Agency for Research on Cancer linked long-term exposure to particle pollution to increased risk of developing lung cancer (World Health Organization International Agency for Research on Cancer 2014). Other studies have shown long-term particle pollution exposure increases hospitalization of children with asthma living near busy roads with heavy truck traffic, reduces lung function in children and teenagers, damages small airways of the lungs, increases risk of death from cardiovascular disease, and increases risk of lower birth weight and infant mortality (American Lung Association 2023b).

TABLE 3.3-2 **Population-Weighted Asthma Rate per 10,000**

COUNTY	ASTHMA RATE PER 10,000
Imperial	79.8
Los Angeles	53.4
Orange	27.9
Riverside	49.6
San Bernardino	60.9
Ventura	36.8
SCAG Region	**49.3**

Source: CalEnviroScreen4.0 2021

Particle pollution particularly has a detrimental effect on sensitive populations including children, elderly, and those with respiratory or cardiovascular illnesses. In March 2015, OEHHA amended their Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments to consider the impact of age, breathing rates, and exposure levels into their cancer risk calculation methodology (OEHHA 2015).

Particulate matter pollution is anticipated to increase due to climate change, which can lead to worsening asthma symptoms, chronic obstructive pulmonary disease (COPD), and respiratory infections associated to premature mortality. Increasing temperatures due to climate change are also anticipated to lead to an increase in wildfires across California. Wildfires are a significant source of smoke and particulate matter exposure. The risk from fires persists even after a wildfire is extinguished because particulate matter from fire ash can be picked up by the winds (OEHHA 2016).

Map 3.3-1, Average Annual Concentration of PM2.5, shows the average annual exposure to PM2.5 in the SCAG region for years 2015 to 2017. Parts of Los Angeles County, southwest San Bernardino County, and northwest Riverside County experienced the highest average annual exposure to PM2.5. Average concentrations in these high exposure areas range from 13.1 to 16.4 micrograms of PM2.5 per cubic meter of air. This range exceeds the federal 15 µg/m^3 standard and is also above the state standard of 12 µg/m^3.

OZONE

Ozone is formed when sunlight reacts with NOx, VOCs, and/or CO. These compounds are typically found in vehicle exhaust but can also be released into the atmosphere from other sources like chemical solvents, power plants, gas stations, paints, and refineries. In April 2020, the USEPA published the "Integrated Science Assessment for Ozone and Related Photochemical Oxidants." The report concluded that ozone pollution causes respiratory harm, is likely to cause early death and cardiovascular harm, may cause harm to the central nervous system, and may cause reproductive and developmental harm (USEPA 2020). High levels of ozone can result in premature death and stroke, acute breathing problems like shortness of breath, wheezing, and coughing, asthma attacks, increase in risk of respiratory infection, increase susceptibility to pulmonary inflammation, and increase in hospitalization and emergency room visits for those with asthma, chronic obstructive pulmonary disease, cardiovascular disease and lung disease. Long term ozone exposure is connected to higher risk of death from respiratory diseases, higher risk of hospitalization for children with asthma especially those that are also low income, higher risk of developing asthma, lower birth weight and decreased lung function in newborns (USEPA 2020). Similar to particle pollution, ozone has a detrimental effect on sensitive populations including children, elderly, and those with respiratory or cardiovascular illnesses.

Map 3.3-2, Average Daily Ozone Exposure in Excess of National 8-Hour Standard, shows the average daily ozone exposure in the SCAG region that is in excess of the national 8-hour standard (0.070 ppm) in the SCAG region for years 2015 to 2017. Although the region largely experiences average daily ozone exposure exceeding the federal standard, the highest concentration of ozone exposure can be seen mostly in southwest San Bernardino and northwest Riverside Counties, and also in north Los Angeles County.

SENSITIVE RECEPTORS

There are many sensitive receptors located throughout the SCAG region. Some persons, such as those with respiratory illnesses or impaired lung function due to other illnesses, people with cardiovascular diseases or diabetes, the elderly over 65 years of age, and children under 14 years of age, can be particularly sensitive to emissions of criteria pollutants. These are the populations most at risk to poor air quality. Facilities and structures where sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses identified by South Coast Air Quality Management District (SCAQMD) in the CEQA Air Quality Handbook to be sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

ATTAINMENT STATUS

NATIONAL AMBIENT AIR QUALITY STANDARDS

The federal CAA required USEPA to establish NAAQS. The NAAQS set primary standards and secondary standards for specific air pollutants. Primary standards define limits for the intention of protecting public health, which include sensitive populations such as asthmatics, children, and the elderly. Secondary Standards define limits to protect public welfare to include protection against decreased visibility, damage to animals, crops, vegetation, and buildings. A summary of the federal ambient air quality standards is shown in **Table 3.3-3, National Ambient Air Quality Standards**.

TABLE 3.3-3 **National Ambient Air Quality Standards**

POLLUTANT		PRIMARY/SECONDARY	AVERAGING TIME	LEVEL
Carbon monoxide		Primary	8 hours	9 ppm
			1 hour	35 ppm
Lead		Primary and secondary	Rolling 3-month average	0.15 µg/m^3
Nitrogen dioxide		Primary	1 hour	100 ppb
		Primary and secondary	Annual	0.053 ppm
Ozone		Primary and secondary	8 hours	0.070 ppm
Particulate matter	PM2.5	Primary	Annual	12 µg/m^3
		Secondary	Annual	15 µg/m^3
		Primary and secondary	24 hours	35 µg/m^3
	PM10	Primary and secondary	24 hours	150 µg/m^3
Sulfur dioxide		Primary	1 hour	75 ppb
		Secondary	3 hours	0.5 ppm

Source: CARB 2016a

The federal CAA sets NAAQS for the main criteria air pollutants: NOx, VOC, PM2.5, PM10, SOx, CO, and lead. Attainment and nonattainment of the NAAQS are variable throughout the SCAG region's counties (**Table 3.3-4, 2023 Nonattainment in Counties in the SCAG Region for All Criteria Pollutants by County by NAAQS**).

TABLE 3.3-4 **2023 Nonattainment Areas in the SCAG Region for All Criteria Pollutants by County by NAAQS**

POLLUTANT (YEAR)	NONATTAINMENT AREA
Imperial County	
PM-10 (1987)	Imperial Valley, CA – (Serious)
PM-2.5 (2006)	Imperial Co, CA – (Moderate)
PM-2.5 (2012)	Imperial Co, CA – (Moderate)
8-Hr Ozone (2008)	Imperial Co, CA – (Moderate)
8-Hr Ozone (2015)	Imperial Co, CA – (Marginal)
Los Angeles County	
Lead (2008)	Los Angeles County-South Coast Air Basin, CA
PM-2.5 (1997)	Los Angeles-South Coast Air Basin, CA – (Moderate)
PM-2.5 (2006)	Los Angeles-South Coast Air Basin, CA – (Serious)
PM-2.5 (2012)	Los Angeles-South Coast Air Basin, CA – (Serious)
8-Hr Ozone (2008)	Los Angeles-South Coast Air Basin, CA – (Extreme)
8-Hr Ozone (2015)	Los Angeles-South Coast Air Basin, CA – (Extreme)
Orange County	
PM-2.5 (1997)	Orange-South Coast Air Basin, CA – (Moderate)
PM-2.5 (2006)	Orange-South Coast Air Basin, CA – (Serious)
PM-2.5 (2012)	Orange-South Coast Air Basin, CA – (Serious)
8-Hr Ozone (2008)	Orange-South Coast Air Basin, CA – (Extreme)
8-Hr Ozone (2015)	Orange-South Coast Air Basin, CA – (Extreme)
Riverside County	
PM-10 (1987)	Coachella Valley, CA – (Serious)
PM-2.5 (1997)	Riverside-South Coast Air Basin, CA – (Moderate)
PM-2.5 (2006)	Riverside-South Coast Air Basin, CA – (Serious)
PM-2.5 (2012)	Riverside-South Coast Air Basin, CA – (Serious)
8-Hr Ozone (2015)	Riverside-South Coast Air Basin, CA – (Extreme)
8-Hr Ozone (2008)	Riverside-Coachella Valley, CA – (Extreme)
8-Hr Ozone (2015)	Riverside-Coachella Valley, CA – (Severe 15)
San Bernardino County	
PM-10 (1987)	San Bernardino Co, CA – (Moderate)
PM-10 (1987)	Searles Valley, CA – (Moderate)
PM-2.5 (1997)	San Bernardino-South Coast Air Basin, CA – (Moderate)
PM-2.5 (2006)	San Bernardino-South Coast Air Basin, CA – (Serious)
PM-2.5 (2012)	San Bernardino-South Coast Air Basin, CA – (Serious)

POLLUTANT (YEAR)	NONATTAINMENT AREA
8-Hr Ozone (2008)	San Bernardino-West Mojave Desert, CA – (Severe 15)
8-Hr Ozone (2008)	San Bernardino-South Coast Air Basin, CA – (Extreme)
8-Hr Ozone (2015)	San Bernardino-West Mojave Desert, CA – (Severe 15)
8-Hr Ozone (2015)	San Bernardino-South Coast Air Basin, CA – (Extreme)
Ventura County	
8-Hr Ozone (2008)	Ventura County, CA – (Serious)
8-Hr Ozone (2015)	Ventura County, CA – (Serious)

Source: USEPA 2023e.

CALIFORNIA AMBIENT AIR QUALITY STANDARDS

The federal CAA permits states to adopt additional or more protective air quality standards if needed. California has set standards for certain pollutants, such as particulate matter and ozone, which are more protective of public health than respective federal standards. California has also set standards for some pollutants that are not addressed by federal standards (CARB 2023b). The state standards for ambient air quality are summarized in **Table 3.3-5, California Ambient Air Quality Standards**.

TABLE 3.3-5 **California Ambient Air Quality Standards**

POLLUTANT		AVERAGING TIME	LEVEL
Carbon monoxide		8 hours	9 ppm
		1 hour	20 ppm
Lead		30-day average	1.5 µg/m^3
Nitrogen dioxide		1 hour	0.180 ppm
		Annual	0.030 ppm
Ozone		8 hours	0.070 ppm
		1 hour	0.09 ppm
Particulate matter	PM2.5	Annual	12 µg/m^3
	PM10	24 hours	50 µg/m^3
		Annual	20 µg/m^3
Sulfur dioxide		1 hour	0.25 ppm
		24 hours	0.04 ppm
Sulfates		24 hours	25 µg/m^3
Hydrogen sulfide		1 hour	0.03 ppm
Vinyl chloride		24 hours	0.01 ppm

Source: CARB 2016a

CAAQS are listed in the Table of Standards in California Code of Regulations Title 17, Section 70200. California has set standards for certain pollutants, such as particulate matter and ozone, which are more protective of public health than respective federal standards. California has also set standards for some pollutants that are not addressed by federal standards such as visibility reducing particles and vinyl chloride (**Table 3.3-6, CAAQS Area Designations**).

TABLE 3.3-6 **CAAQS Area Designations**

AIR BASIN	OZONE	PM2.5	PM10	CO	NO2	SO2	SULFATES	HYDROGEN SULFIDE (H2S)	PB	VISIBILITY-REDUCING PARTICLES
Mojave Desert	Nonattainment	Attainment	Nonattainment	Kern County (MDAB) (U); Los Angeles County (MBAB) (A); Riverside County (MDAB) (U); San Bernardino County (MDAB) (A)	Attainment	Attainment	Attainment	Kern County (MDAB) (U); Los Angeles County (MDAB)(U); Riverside County (MDAB)(U); San Bernardino County Searles Valley Planning Area (MDAB)(N)	Attainment	Unclassified
Salton Sea	Nonattainment	City of Calexico (N), Remainder of County (A)	Nonattainment	Attainment	Attainment	Attainment	Attainment	Unclassified	Attainment	Unclassified
South Central Coast (Ventura County)	Nonattainment	Attainment (Santa Barbara County Unclassified [U])	Nonattainment	Attainment	Attainment	Attainment	Attainment	Unclassified	Attainment	Unclassified
South Coast	Nonattainment	Nonattainment	Nonattainment	Attainment	CA 60 Near-road Portion of San Bernardino, Riverside, and Los Angeles Counties (N); Remainder of Air Basin (U)	Attainment	Attainment	Unclassified	Attainment	Unclassified

Source: CARB 2020

EXISTING CRITERIA POLLUTANT EMISSIONS

The existing conditions (base year 2019) of the criteria pollutant emissions for the six counties in the SCAG region are shown in **Table 3.3-7, Criteria Pollutant Emissions by County—Existing Conditions (2019)**.

TABLE 3.3-7 **Criteria Pollutant Emissions by County—Existing Conditions (2019)**

	(TONS/DAY)								
	ROG		NOX			CO	PM10	PM2.5	SOX
COUNTY	SUMMER	ANNUAL	SUMMER	ANNUAL	WINTER	WINTER	ANNUAL	ANNUAL	ANNUAL
Imperial	2	2	5	6	6	16	0.3	0.1	<0.1
Los Angeles	53	52	84	93	91	497	6.9	3.0	1.0
Orange	16	16	22	25	24	149	2.2	0.9	0.3
Riverside	14	13	28	31	30	115	2.0	0.9	0.3
San Bernardino	16	15	32	35	34	129	2.2	1.0	0.3
Ventura	3	3	6	7	6	25	0.5	0.2	0.1

Source: SCAG 2023b

The SCAG region is encompassed by CARB's air quality monitoring program. The air monitoring stations collect ambient level measurements for criteria pollutants. The data generated are used to define the nature and severity of pollution in California; determine which areas of California are in attainment or non-attainment; identify pollution trends in the state; support agricultural burn forecasting; and develop air models and emission inventories (CARB 2023a). There are 92 active air monitoring stations in the SCAG region: 11 in Imperial County, 31 in Los Angeles County, five in Orange County, 18 in Riverside County, 20 in the San Bernardino County, and seven in Ventura County. These monitoring stations are shown in **Map 3.3-3, Air Quality Basins and Monitoring Stations** (CARB 2023g).

HEALTH RISK ASSESSMENT, NO2 CONCENTRATION AND NITROGEN DEPOSITION ASSESSMENT

The Health Risk Assessment (HRA) (**Appendix B-2**) assesses the potential carcinogenic risk to persons potentially exposed to harmful diesel exhaust emissions near freeways within the SCAG region. Using the USEPA-approved CARB On-Road Vehicle Emission Factors (EMFAC2021) model, effective November 15, 2022, exhaust DPM (modeled as PM2.5 and PM10) is modeled because DPM has carcinogenic health effects. Cancer risk is used as a proxy for overall health effects in this assessment. Discussed in more detail in Appendix B-2 and Chapter 4.0, *Alternatives*, of this PEIR, the model simulates three conditions: existing conditions, 2050 No Project, and 2050 under Connect SoCal 2024 (additional build scenarios are discussed qualitatively). Comparison between the existing conditions and the Plan is described in Section 3.3.4, *Environmental Impacts*.

Emissions and cancer risk are evaluated along 16 transportation corridors within the SCAG region. The corridors were determined in prior RTP/SCS PEIRs primarily based on highest traffic volumes, highest heavy-duty diesel truck volumes (HDDT) as well as proximity to sensitive receptors. Quantitative modeling of the entire length of each freeway corridor (some of which extend more than 90 miles) is impractical and therefore representative high-volume segments were selected.

For this analysis, 16 transportation corridor segments (previously evaluated in the 2016 RTP/SCS PEIR [SCAG 2016] and the 2020 RTP/SCS PEIR) were evaluated (see **Map 3.3-4, Overview of Modeled Freeway Segments**). By selecting the same 16 segments as evaluated in 2016 and 2020, it affords an opportunity to view progress since the adoption of the RTP/SCS iterations. Eight of the sixteen segments were also previously evaluated in the 2012 RTP/SCS. When selecting the additional eight segments for analysis in 2016, SCAG ranked potential transportation segments by the volume of HDDT traffic. Segments were then ranked again based on the density of sensitive receptors. Using these rankings, one segment was chosen in each county and an additional two segments in Los Angeles and Riverside Counties were chosen based on heavy-duty diesel traffic. These 16 segments were then quantitatively modeled for increased cancer risk (see Table 3.3-18, *Summary Maximum Exposed Individual Residential 30-Year Exposure Cancer Risk*, below).

HDDT comprise the majority of DPM emissions. An air quality dispersion model (AERMOD) was used to calculate the anticipated DPM concentrations at identified receptors out to 1,000 meters away from each freeway segment. Risk calculations were undertaken for worker, residential, and school sensitive receptors. Table 3.3-18 presents a summary of the cancer risk per million exposed persons for each of the three scenarios and 16 freeway segments. The HRA (see Appendix B-2) also includes a discussion comparing the health risk calculations at each segment under Connect SoCal 2024 as well as the plans from the 2012 RTP/SCS, 2016 RTP/SCS and 2020 RTP/SCS.

In addition, for the same 16 transportation segments, a quantitative analysis of the NO2 concentrations at near-freeway sensitive receptors was conducted for the health impacts analysis. Like the HRA, the NO2 concentrations associated with the three additional no-build and build simulations are discussed qualitatively. The NO2 emissions associated with each segment were obtained from the AERMOD dispersion model in order to estimate concentrations at the sensitive receptor locations surrounding each of the 16 segments (see section Methodology, below, for additional details).

In addition to impacts to human health, air pollutants have the potential to impact plants including trees and agricultural crops and wildlife. Impacts to sensitive species can be particularly important because such species are typically already stressed, and the additional stressor of poor air quality can have a disproportionate impact. The potential damage ranges from decreases in productivity, a weakened ability to survive drought and pests, to direct mortality. Wildlife can be both directly impacted by air pollution and also as the plants and trees that comprise their habitats are weakened or killed. Aquatic species and habitats are impacted by air pollution through the formation of acid rain that raises the pH level in oceans, rivers, and lakes (USEPA 2023n). Nitrogen deposition occurs from the emissions of nitrogen-based pollutants, like those occurring from the combustion of fossil fuels. Increases in nitrogen deposition can lead to soil and water acidification, plant nutrient imbalances, declines in plant health, changes in species composition, increases in invasive species and increased susceptibility to secondary stresses. Nitrogen deposition includes both wet and dry oxidized and reduced nitrogen. Wet deposition is when rain, snow, or fog carries gases and particles to the earth's surface. Dry deposition is when gases and particles are carried to the surface in the absence of rain, snow, or fog.

Combustion of fossil fuels from mobile sources results in the emissions of nitrogen-based pollutants and the deposition of nitrogen. It is expected that much of the nitrogen deposition will occur very close to the sources along the major roadways studied. Air dispersion modeling will demonstrate the relationship between nitrogen deposition and distance from roadway sources. However, studies have also shown that long distance transportation of nitrogen may result in higher-than-expected amounts of nitrogen depositions in potentially fire-prone regions, resulting in added plant life growth and higher risk of wildfires. However, long distance transportation modeling was not examined as part of the analysis in this PEIR (Heindel et al. 2022).

Regional nitrogen deposition is quantified for the same 16 segments by using the wet and dry gaseous deposition algorithms in the AERMOD dispersion model. Nitrogen deposition is quantified for Existing (2019)and 2050 Plan. But as there is no national or state standard for comparison and no guidance on how to analyze air quality impacts from nitrogen deposition under CEQA, nitrogen deposition results are primarily disclosed for informational purposes (see section Methodology, below, for additional details).

AMBIENT AIR QUALITY

The five air districts in the SCAG region each monitor air quality conditions in their region. The characterization of the ambient air quality in relation to criteria pollutants was based on peak readings of criteria pollutants in the SCAG air basins (**Table 3.3-8, Peak Criteria Pollutants Readings for the SCAG Region Air Basins**). The data shows that ozone, PM2.5, and PM10 readings consistently exceeded the standards in each of the air basins.

TABLE 3.3-8 **Peak Criteria Pollutants Readings for the SCAG Region Air Basins**

POLLUTANT	PERIOD	POLLUTANT STANDARDS		2019 PEAK CRITERIA READING	DAYS IN EXCESS OF STANDARDS 2019		2020 PEAK CRITERIA READING	DAYS IN EXCESS OF STANDARDS 2020		2021 PEAK CRITERIA READING	DAYS IN EXCESS OF STANDARDS 2021	
		CA	FEDERAL		CA	FEDERAL		CA	FEDERAL		CA	FEDERAL
South Coast Air Basin												
Ozone (O3)	1-hour	0.09 ppm (180 µg/m^3)	—	0.137	73	8	0.185	104	17	0.148	74	7
	8-hour	0.07 ppm (137 µg/m^3)	0.07 ppm (137 µg/m^3)	0.118	129	126	0.139	160	157	0.120	133	130
Respirable particulate matter (PM10)	24-hour	50 µg/m^3	150 µg/m^3	CA 182.4 Federal 283.5	116	2	CA 185.2 Federal 324.7	36	2	CA 138.5 Federal 233.3	91	2
Fine particulate matter (PM2.5)	24-hour	—	35 µg/m^3	CA 120.9 Federal 81.3	—	10	CA 175.0 Federal 175.0	—	19	CA 105.8 Federal 102.1	—	14
Nitrogen dioxide (NO2)	1-hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	CA 97 Federal 97.7	0	0	CA 101 Federal 101.6	0	1	CA 91 Federal 91.5	0	0
Mojave Desert Air Basin												
Ozone (O3)	1-hour	0.09 ppm (180 µg/m^3)	—	0.119	12	0	0.130	19	1	0.131	31	3
	8-hour	0.07 ppm (137 µg/m^3)	0.07 ppm (137 µg/m^3)	CA 0.090 Federal 0.090	75	72	CA 0.101 Federal 0.100	89	85	CA 0.107 Federal 0.106	77	75
Respirable particulate matter (PM10)	24-hour	50 µg/m^3	150 µg/m^3	CA 240.8 Federal 248.7	15	2	CA 360.9 Federal 401.5	29	1	CA 330.6 Federal 591.6	33	1
Fine particulate matter (PM2.5)	24-hour	—	35 µg/m^3	CA 34.1 Federal 34.1	—	0	CA 125.4 Federal 125.4	—	15	CA 178 Federal 178	—	12
Nitrogen dioxide (NO2)	1-hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	CA 59 Federal 59.8	0	0	CA 62 Federal 62.8	0	0	CA 62 Federal 62.4	0	0
Salton Sea Air Basin												
Ozone (O3)	1-hour	0.09 ppm (180 µg/m3)	—	0.106	5	0	0.119	9	0	0.122	10	0
	8-hour	0.07 ppm (137 µg/m^3)	0.07 ppm (137 µg/m^3)	CA 0.089 Federal 0.089	47	43	CA 0.094 Federal 0.094	53	49	CA 0.095 Federal 0.094	38	35

POLLUTANT	PERIOD	POLLUTANT STANDARDS		2019 PEAK CRITERIA READING		DAYS IN EXCESS OF STANDARDS 2019		2020 PEAK CRITERIA READING		DAYS IN EXCESS OF STANDARDS 2020		2021 PEAK CRITERIA READING		DAYS IN EXCESS OF STANDARDS 2021	
		CA	FEDERAL			CA	FEDERAL			CA	FEDERAL			CA	FEDERAL
Respirable particulate matter (PM10)	24-hour	50 µg/m^3	150 µg/m^3	CA 323.5	Federal 324.4	112	2	CA 297.2	Federal 680.6	166	10	CA 543.1	Federal 547.1	151	3
Fine particulate matter (PM2.5)	24-hour	—	35 µg/m^3	CA 53.1	Federal 53.1	—	1	CA 47.4	Federal 47.4	—	5	CA 60.8	Federal 60.8	—	2
Nitrogen dioxide (NO2)	1-hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	CA 96	Federal 96.2	0	0	CA 75	Federal 75.6	0	0	CA 61	Federal 61.7	0	0
South Central Coast Air Basin															
Ozone (O3)	1-hour	0.09 ppm (180 µg/m^3)	—	0.091		0	0	0.126		5	1	0.090		0	0
	8-hour	0.07 ppm (137 µg/m^3)	0.07 ppm (137 µg/m^3)	CA 0.079	Federal 0.078	9	7	CA 0.106	Federal 0.106	26	22	CA 0.081	Federal 0.079	8	8
Respirable particulate matter (PM10)	24-hour	50 µg/m^3	150 µg/m^3	CA 192.4	Federal 187.8	57	2	CA 357.2	Federal 367.8	55	6	CA 125	Federal 377.8	44	1
Fine particulate matter (PM2.5)	24-hour	—	35 µg/m^3	CA 26.3	Federal 26.3	—	0	CA 242.1	Federal 242.1	—	11	CA 33.5	Federal 33.5	—	0
Nitrogen dioxide (NO2)	1-hour	0.18 ppm (338 µg/m^3)	100 ppb (190 µg/m^3)	CA 45	Federal 45	0	0	CA 42	Federal 42	0	0	CA 62	Federal 62	0	0

Source: CARB 2023h

Table Notes: CARB does not provide data for carbon monoxide (CO).

* Insufficient data available to determine the value. Measured days equal to number presented.

3.3.3 REGULATORY FRAMEWORK

FEDERAL

FEDERAL CLEAN AIR ACT

Congress passed the first major Clean Air Act (CAA) in 1970 (42 U.S. Code [USC] Sections 7401 et seq.). This Act gives USEPA broad responsibility for regulating motor vehicle emissions from many sources of air pollution from mobile to stationary sources. Pursuant to the CAA, USEPA is authorized to regulate air emissions from mobile sources like heavy-duty trucks, agricultural and construction equipment, locomotives, lawn and garden equipment, and marine engines; and stationary sources such as power plants, industrial plants, and other facilities. The CAA sets NAAQS for the six most common air pollutants to protect public health and public welfare. These pollutants include particulate matter, ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. For each pollutant, USEPA designates an area as attainment for meeting the standard or nonattainment for not meeting the standard. A maintenance designation entails an area that was previously designated as nonattainment but is currently designated as attainment. The CAA directs states to develop state implementation plans (SIP), applicable to appropriate industrial sources in the state, in order to achieve these standards (USEPA 2023m). As discussed in Section 3.3.1, *Environmental Setting*, under *National Ambient Air Quality Standards*, above, the NAAQS set primary standards and secondary standards for criteria air pollutants. Primary standards define limits for the intention of protecting public health and secondary Standards define limits to protect public welfare to include protection against decreased visibility, damage to animals, crops, vegetation, and buildings (see Table 3.3-3, *National Ambient Air Quality Standards*, for a summary of the federal ambient air quality standards).

CAA SECTIONS 112(F) AND 112(D): NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

CAA Section 112 addresses emissions of hazardous air pollutants. Prior to 1990, CAA established a risk-based program under which only a few standards were developed. The 1990 CAAA revised Section 112 to first require issuance of technology-based standards for major sources and certain area sources. "Major sources" are defined as a stationary source or group of stationary sources that emit or have the potential to emit 10 tons per year or more of a hazardous air pollutant or 25 tons per year or more of a combination of hazardous air pollutants. An "area source" is any stationary source that is not a major source (USEPA 2023m).

For major sources, Section 112 requires that USEPA establish emission standards that require the maximum degree of reduction in emissions of hazardous air pollutants. These emission standards are commonly referred to as "maximum achievable control technology" or MACT standards. Eight years after the technology-based MACT standards are issued for a source category, USEPA is required to review those standards to determine whether any residual risk exists for that source category and, if necessary, revise the standards to address such risk (USEPA 2023m).

The Risk and Technology Review (RTR) is a combined effort to evaluate both risk and technology as required by the CAA after the application of MACT standards. CAA Section 112(f) requires USEPA to complete a report to Congress that includes a discussion of methods USEPA would use to evaluate the risks remaining after the application of MACT standards. These are known as residual risks. USEPA published the Residual Risk Report to Congress (PDF) in March 1999. Section 112(f)(2) directs USEPA to conduct risk assessments on each source category subject to MACT standards, and to determine if additional standards are needed to reduce residual risks. CAA Section 112(d)(6) requires USEPA to review and revise the MACT standards, as necessary, taking into account developments in practices, processes and control technologies (USEPA 2023m).

STATE IMPLEMENTATION PLAN/AIR QUALITY MANAGEMENT PLANS

A SIP is required by USEPA to ensure compliance with the NAAQS. States must develop a general plan to maintain air quality in areas of attainment and a specific plan to improve air quality for areas of nonattainment. SIPs are a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, state regulations, and federal controls. The SIP verifies that the state has a proper air quality management program that adheres to or strives to reach the most up to date emissions requirements (USEPA 2023a). The 1990 amendments to the federal CAA set deadlines for attainment based on the severity of an area's air pollution problem. In adherence to CAA Section 172, states must adopt additional regulatory programs for nonattainment areas (USEPA, Undated). Particularly in California, the SIP not only complies with NAAQS, but also the more stringent CAAQS.

Air quality management plans (AQMP) are required to ensure compliance with the state and federal requirements. AQMPs contain scientific information and use analytical tools to demonstrate a pathway towards achieving attainment for the criteria air pollutants. Within the SCAG region, five air districts—SCAQMD, Mojave Desert Air Quality Management District (MDAQMD), Imperial County Air Pollution Control District (ICAPCD), Antelope Valley Air Quality Management District (AVAQMD), and the Ventura County Air Pollution Control District (VCAPCD)—are responsible for developing the AQMPs (SCAG 2023a). The approval process begins when the local air districts develop, adopt, and subsequently submit their adopted AQMPs/SIPs to CARB. CARB is the lead agency and responsible agency for submitting the SIP to USEPA. CARB forwards SIP revisions to USEPA for approval and publication in the Federal Register. The Code of Federal Regulations Title 40, Chapter I, Part 52, Subpart F, Section 52.220, lists all of the items included in the California SIP (40 CFR 52.220).

TRANSPORTATION CONFORMITY

Transportation conformity is required under federal CAA Section 176(c) to ensure that federally supported highway and transit project activities are consistent with ("conform to") the purpose and requirements of the SIP. Conformity currently applies to areas that are designated nonattainment, and those redesignated to attainment after 1990 ("maintenance areas"[2] with plans developed under CAA Section 175A) for the following transportation-related criteria pollutants: ozone, particulate matter (PM2.5 and PM10), CO, and NO2.[3] Conformity to the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the applicable NAAQS. The transportation conformity regulation is found in 40 CFR Part 93. Conformity requires reporting on the timely implementation of transportation control measures (TCMs) in ozone nonattainment areas designated as serious or worse, thus reinforcing the link between AQMP/SIPs and the transportation planning process. Committed TCMs are required to be given funding priority and to be implemented on schedule, and in the case of any delays, any obstacles to implementation have been or are being overcome. In the SCAG region, there are two areas for which the ozone SIPs contain TCMs: SCAB and the Ventura County portion of SCCAB. (It is noted that the Ventura County SIP does not claim emission reduction credits from TCM projects. They have been included to assist transportation and air quality agencies to identify projects that have the potential of reducing vehicle emissions, vehicle trips, and vehicle miles traveled [USEPA 2009b].)

[2] Maintenance areas means an area previously designated nonattainment pursuant to CAA and subsequently redesignated to attainment subject to the requirement to develop a maintenance plan.

[3] It is important to note that transportation conformity requirements no longer apply to SCAB under the NO2 NAAQS because the region has attained the standards consistently for over 20 years (USEPA letter to SCAG, April 25, 2019, as cited in SCAG 2020c).

FEDERAL CAA RULES

The mobile and stationary sources of emissions are subject to different rules and regulations. For the mobile sources, the rules apply to cars, trucks, buses, recreational vehicles, engines, generators, farm and construction machines, lawn and garden equipment, marine engines, and locomotives. In addition, the compositions of fuels used to operate mobile sources are regulated to help reduce harmful emissions. For stationary resources including factories and chemical plants, pollution control equipment are installed to meet specific emission limits set under the CAA. The New Source Review (NSR) and Prevention of Significant Deterioration (PSD) require major industrial operators such as coal-fired power, acid, glass, and cement plants and petroleum refineries to make modifications to existing facilities or install new controls resulted in emissions of pollutants on new facilities to reduce degradation and harm against public health. USEPA works with its federal partners through CAA to ensure compliance with rules through active monitoring and to make sure that the regulated community obeys environmental laws/regulations through on-site inspections and record reviews that lead to enforcement in order to meet environmental regulatory requirements (USEPA 2019).

CLEAN AIR ACT WAIVER FOR CALIFORNIA'S GHG EMISSION STANDARDS FOR NEW MOTOR VEHICLES

Due to the unique topography and rapid population increase within the Los Angeles basin, federal standards may not be effective enough to meet clean air standards, therefore the state was granted the ability to create stricter standards than set by the CAA. Utilizing the ability to set stricter emission standards, California was granted a waiver of the CAA in July 2009 so that the state may set its own vehicle emission standards for new motor vehicles in order to reduce GHG and ozone emissions (Federal Register 2009). On September 19, 2019, the USEPA issued the final "One National Program Rule" The rule states that federal law preempts state and local laws regarding tailpipe GHG emissions standards, zero emissions vehicle mandates, and fuel economy for automobiles and light duty trucks. The rule revoked California's Clean Air Act waiver and preempted California's Advanced Clean Car Regulations (U.S. Department of Transportation and USEPA 2019; SCAG 2019b).

However, under the new Biden Administration, in August 2021, USEPA proposed to revise and strengthen the emissions standards for passenger cars and light trucks for model years 2023–2026 (Federal Register 2022a). On March 14, 2022, USEPA issued a notice of decision to reinstate California's Clean Air Act waiver for its Advanced Clean Car regulations (Federal Register 2022b). Refer to Section 3.6, *Energy*, and Section 3.8, *Greenhouse Gas Emissions*, for more information.

MOBILE SOURCE EMISSIONS CONTROLS PROGRAMS

USEPA has adopted several mobile source emission control programs such as (USEPA 2023h):

- **Control of Hazardous Air Pollutants from Mobile Sources.** In February 2007, USEPA finalized this rule to reduce hazardous air pollutants from mobile sources. The rule limits the benzene content of gasoline and reduces toxic emissions from passenger vehicles and gas cans. USEPA estimates that in 2030 this rule would reduce total emissions of mobile source air toxics by 330,000 tons and VOC emissions (precursors to ozone and PM2.5) by over 1 million tons (USEPA 2007).
- **Heavy-Duty Onboard Diagnostic Rule (74 FR 8310).** In February 2009, USEPA published a final rule, requiring that these advanced emissions control systems be monitored for malfunctions via an onboard diagnostic system (OBD), similar to those systems that have been required on passenger cars since the mid-1990s. This final rule will require manufacturers to install OBD systems that monitor the functioning of emission

control components and alert the vehicle operator to any detected need for emission related repair (USEPA 2009a).

- **Small SI and Marine SI Engine Rule (73 FR 25098).** Published October 2008, these exhaust emission standards applied starting in 2010 for new marine spark-ignition (SI) engines, including first-time USEPA standards for sterndrive and inboard engines. The exhaust emission standards applied starting in 2011 and 2012 for different sizes of new land based, spark-ignition engines at or below 19 kilowatts (kW). These small engines are used primarily in lawn and garden applications. Estimated annual nationwide reductions are anticipated to be 604,000 tons of volatile organic hydrocarbon emissions, 132,200 tons of NOx emissions, and 5,500 tons of directly emitted particulate matter (PM2.5) emissions (USEPA 2008b).
- **Locomotive and Commercial Marine Rule (66 FR 5002).** Published May 2008, the controls apply to all types of locomotives, including line-haul, switch, and passenger, and all types of marine diesel engines below 30 liters per cylinder displacement, including commercial and recreational, propulsion and auxiliary. The near-term program, which started in 2009, includes new emission limits for existing locomotives and marine diesel engines that apply when they are remanufactured, and take effect as soon as certified remanufacture systems are available. The long-term emissions standards for newly built locomotives and marine diesel engines are based on the application of high-efficiency catalytic after-treatment technology. These standards take effect in 2015 for locomotives and in 2014 for marine diesel engines (USEPA 2008a).
- **Clean Air Nonroad Diesel Rule (65 FR 6698).** Published June 2004, this comprehensive national program regulates nonroad diesel engines and diesel fuel as a system. New engine standards took effect in the 2008 model year, phasing in over a number of years. These standards are based on the use of advanced exhaust emission control devices (USEPA 2004).
- **Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements (66 FR 5002).** Published January 2001, USEPA established a comprehensive national control program to regulate the heavy-duty vehicle and its fuel as a single system. As part of this program, new emission standards took effect in model year 2007, and apply to heavy-duty highway engines and vehicles. These standards are based on the use of high-efficiency catalytic exhaust emission control devices or comparably effective advanced technologies (USEPA 2001).
- **New Source Performance Standards (NSPS) for Stationary Engines.** Nonroad diesel engines are used in excavators and other construction equipment, farm tractors and other agricultural equipment, heavy forklifts, airport ground service equipment, and utility equipment such as generators, pumps, and compressors (USEPA 2023k). USEPA has adopted multiple tiers of emission standards, including reducing emissions from nonroad diesel engines by integrating engine and fuel controls as a system. To meet these Tier 4 emission standards, engine manufacturers will produce new engines with advanced emission control technologies (USEPA 2023k).

STATE

CALIFORNIA CLEAN AIR ACT

The California CAA of 1988 (Chapter 1568, Statutes of 1988) requires all air pollution control districts in the state to aim to achieve and maintain state ambient air quality standards for ozone, carbon monoxide, and nitrogen dioxide by the earliest practicable date and to develop plans and regulations specifying how the districts will meet this goal. There are no planning requirements for the state PM10 standard. CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for meeting state requirements of the federal CAA, administrating the California CAA, and establishing the CAAQS. The California CAA, amended in 1992,

requires all AQMDs in the state to achieve and maintain the CAAQS. The CAAQS are generally stricter than national standards for the same pollutants, but there is no penalty for nonattainment. California has also established state standards for sulfates, hydrogen sulfide (H2S), vinyl chloride, and visibility-reducing particles, for which there are no national standards (Sacramento Metropolitan Air Quality Management District 2023). As discussed in Section 3.3.1, *Environmental Setting*, under *California Ambient Air Quality Standards*, above, California has set standards for certain pollutants, such as particulate matter and ozone, which are more protective of public health than respective federal standards. California has also set standards for some pollutants that are not addressed by federal standards (see Table 3.3-5, *California Ambient Air Quality Standards*, for a summary of the state standards for ambient air quality.

CALIFORNIA HEALTH AND SAFETY CODE

Under the California Health and Safety Code, Division 26 (Air Resources), CARB is authorized to adopt regulations to protect public health and the environment through the reduction of TACs and other air pollutants with adverse health effects. CARB has promulgated several mobile and stationary source airborne toxic control measures (ATCMs) pursuant to this authority. For instance, effective as of July 2003, CARB approved an ATCM that limits school bus idling and idling at or near schools to only when necessary for safety or operational concerns (13 CCR Chapter 10, Section 2480). This ATCM is intended to reduce DPM and other TACs and air pollutants from heavy-duty motor vehicle exhaust. It applies to school buses, transit buses, school activity buses, youth buses, general public paratransit vehicles, and other commercial motor vehicles. This ATCM focuses on reducing public exposure to DPM and other TACs, particularly for children riding in and playing near school buses and other commercial motor vehicles, who are disproportionately exposed to pollutants from these sources. In addition, effective February 2005, CARB approved an ATCM to limit the idling of diesel-fueled commercial motor vehicles with gross vehicular weight ratings of greater than 10,000 pounds, regardless of the state or country in which the vehicle is registered (13 CCR Chapter 10, Section 2485).

SENATE BILL 656 (CHAPTER 738, STATUES OF 2003)

In 2003, the Legislature enacted Senate Bill (SB) 656 (Chapter 738, Statutes of 2003), codified as Health and Safety Code Section 39614, to reduce public exposure to PM10 and PM2.5. SB 656 required ARB, in consultation with local air pollution control and air quality management districts (air districts), to develop and adopt, by January 1, 2005, a list of the most readily available, feasible, and cost-effective control measures that could be employed by CARB and the air districts to reduce PM10 and PM2.5 (collectively referred to as PM).

The legislation established a process for achieving near-term reductions in PM throughout California ahead of federally required deadlines for PM2.5 and provided new direction on PM reductions in those areas not subject to federal requirements for PM. Measures adopted as part of SB 656 complement and support those required for federal PM2.5 attainment plans, as well as for State ozone plans. This ensures continuing focus on PM reduction and progress towards attaining California's more health protective standards. This list of air district control measures was adopted by CARB on November 18, 2004. CARB also developed a list of State PM control measures for mobile and stationary sources, including measures planned for adoption as part of CARB's Diesel Risk Reduction Plan. The lists are at the following web site: http://www.arb.ca.gov/pm/pmmeasures/pmmeasures.htm.

TOXIC AIR CONTAMINANT IDENTIFICATION AND CONTROL ACT

The Toxic Air Contaminant Identification and Control Act (Assembly Bill [AB] 1807, Chapter 1047, Statutes of 1983) created the California Air Toxics Program in 1983. It established a two-step process of risk identification and risk

management to address potential health effects associated with public exposure to toxic substances in the air. In the risk identification step, CARB and the OEHHA determine if a substance should be formally identified, or "listed," as a TAC in California. Since inception of the program, a number of such substances have been identified and listed. In 1993, legislative amendments were enacted for the program to identify the 189 federal hazardous air pollutants (HAPs) as TACs.

In the risk management step, CARB reviews emission sources of an identified TAC to determine whether regulatory action is needed to reduce the risk. Based on results of that review, CARB has promulgated a number of ATCMs, both for mobile and stationary sources. In 2004, CARB adopted an ATCM to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to DPM and other TACs. The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure does not allow diesel-fueled commercial vehicles to idle for more than 5 minutes at any given time. These diesel-related measures are critical in reducing the statewide cancer risk and creating healthier communities (CARB 2019).

CARB AIR TOXICS "HOT SPOTS" INFORMATION AND ASSESSMENT ACT

The California Air Toxics Program is supplemented by the Air Toxics "Hot Spots" program, which became law (AB 2588, Statutes of 1987) in 1987. In 1992, the AB 2588 program was amended by Senate Bill 1731 to require facilities that pose a significant health risk to the community to perform a risk reduction audit and reduce their emissions through implementation of a risk management plan. Under this program, which is required under the Air Toxics "Hot Spots" Information and Assessment Act (California Health and Safety Code Section 44363), facilities are required to report their air toxics emissions, assess health risks, and notify nearby residents and workers of significant risks when present (CARB 2019). In March 2015, the OEHHA adopted "The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments" in accordance with Health and Safety Code Section 44300. The Final Guidance Manual incorporates the scientific basis from three earlier developed Technical Support Documents to assess risk from exposure to facility emissions. The 2015 OEHHA Final Guidance has key changes including greater age sensitivity in particular for children, decreased exposure durations, and higher breathing rate profiles. Because cancer risk could be up to three times greater using this new guidance, it may result in greater mitigation requirements, more agency backlog, and increased difficulty in getting air permits. Regardless of the change in calculation methodology, actual emissions and cancer risk within South Coast Air Basin has declined by more than 50 percent since 2005 (OEHHA 2015).

CARB provides a computer program, the Hot Spots Analysis and Reporting Program (HARP), to assist in a coherent and consistent preparation of an HRA. HARP2, an update to HARP, was released in March 2015. HARP2 has a more refined risk characterization in HRA and CEQA documents and incorporates the 2015 OEHHA Final Guidance (CARB 2023c).

MULTIPLE AIR TOXICS EXPOSURE STUDY

To date, the most comprehensive study of air toxics in the SCAB is the Multiple Air Toxics Exposure Study V (MATES-V), conducted by SCAQMD in 2021.[4] MATES combines monitoring of ambient air toxics, emissions inventories, and computer modeling to estimate the cancer risk from air pollution. The monitoring program measured numerous air pollutants, including both gases and particulates. SCAQMD's MATES-IV found that the average cancer risk from air

[4] In October 2023, SCAQMD initiated a multi-year public process to develop MATES VI, which is expected to be completed in years 2027-2028 (South Coast Air Quality Management District 2023d, 2023e).

pollution across the region declined from MATES-III in 2005 using similar methods of analysis. The risk reduction follows a trend of declining toxic emissions in the region since the first MATES study was conducted in 1987. MATES-IV found that mobile sources are responsible for 90 percent of the risk (SCAQMD 2015c).

The MATES-V study was performed as a follow up to the MATES-IV study, examining air toxics for a one-year period at ten fixed sites beginning in January 2019. This study included additional exposure pathways besides inhalation. The addition of non-inhalation pathways increases cancer risk by approximately 8 percent relative to inhalation-only studies. The level of air toxics continued to decline compared to previous MATES iterations, with levels ranging from 585 to 842 ppm. This corresponds to a reduction in cancer risk by approximately 40% from MATES-IV (published in 2015) and 84% from MATES-II (published in 2000) (SCAQMD 2021). According to MATES V, DPM is the largest contributor to overall air toxics cancer risk, as was the case in the prior MATES studies. The average levels of DPM, which is a State of California air toxic, continued to decline compared to previous MATES iterations with MATES V indicating 53 percent lower DPM levels compared to MATES IV and 86 percent lower levels since MATES II based on monitored data. Substantial decreases in DPM health impacts are expected within the next 5-10 years in the region as declining DPM levels are expected from continued regulatory and control strategy efforts by USEPA, CARB, and regional air districts to reduce DPM emissions, especially from mobile sources (SCAQMD 2021).

CALIFORNIA AIR RESOURCES BOARD MOBILE SOURCE PROGRAMS

EMISSION REDUCTION PLAN FOR PORTS AND GOODS MOVEMENT

CARB approved the 2006 Emission Reduction Plan for Ports and Goods Movement in California. The Plan is an essential component of California's effort to reduce community exposure to air pollution and to meet new federal air quality standards for ozone and PM2.5. The plan's goals are to (CARB 2006b):

1. Reduce total statewide international and domestic goods movement emissions to the greatest extent possible and at least back to 2001 levels by year 2010.
2. Reduce the statewide DPM health risk from international and domestic goods movement 85 percent by year 2020.
3. Reduce NOx emissions from international goods movement in the South Coast 30 percent from projected year 2015 levels, and 50 percent from projected year 2020 levels based on preliminary targets for attaining federal air quality standards.
4. Apply the emission reduction strategies for ports and goods movement statewide to aid all regions in attaining air quality standards.
5. Make every feasible effort to reduce localized risk in communities adjacent to goods movement facilities as expeditiously as possible.

GOODS MOVEMENT EMISSION REDUCTION PROGRAM

In June 2015, CARB released Proposition 1B: Goods Movement Emission Reduction Program Final 2015 Guidelines for Implementation. This program is designed to reduce diesel exhaust emissions from trucks, locomotives, ships, harbor craft, and cargo handling equipment. The guidelines shall include, at a minimum, all of the following (CARB 2015):

- An application process for funds, and any limits on administration costs.
- Requirements that local agencies identify the useful life of the project and project delivery milestones as part of the application process.

- Criteria for selection of local and State agency projects and equipment projects.
- Requirements for match funding.
- The method by which CARB will consider the air basin's status in achieving State and federal air quality standards.
- Requirements that grant agreements between CARB and local agencies, and interagency agreements with other State agencies, identify project milestones, and remedies for failure to meet project milestones.
- Accountability and auditing requirements, including provisions for Program reviews or fiscal audits of project expenditures and outcomes.

CARB Staff shall evaluate the progress of the Program and any changes needed to improve its effectiveness, plus advances in technology and updated equipment costs that create a need to revise the list of equipment project options. These guidelines are designed and intended to effectuate the provisions of SB 88, AB 201, and AB 892 (CARB 2015).

CARB SMALL OFF-ROAD ENGINE EXHAUST EMISSION STANDARDS

Small off-road engines include off-road spark-ignition engines that produce 19 kW gross power or less (less than 25 horsepower), including lawn and garden, industrial, logging, airport ground support, and commercial utility equipment; golf carts; and specialty vehicles. These emission standards apply to HC, NOx, CO, and PM emissions with increasingly stricter standards from 1995 to 2013 (CARB 2023j).

CARB OFF-ROAD COMPRESSION-IGNITION DIESEL ENGINE EXHAUST EMISSION STANDARDS

These engines include new compression-ignition engines (a.k.a. diesel engines) that are found in a wide variety of off-road applications such as farming, construction, and industrial. Some familiar examples include tractors, excavators, dozers, scrapers, portable generators, transport refrigeration units (TRUs), irrigation pumps, welders, compressors, scrubbers, and sweepers. USEPA set Tier 4 construction engine standards in order to reduce NOx and particulate matter emissions. CARB received authorization from USEPA on September 13, 2013, to enforce the Off-Road regulation's restrictions on fleets adding vehicles with older tier engines, and began enforcing on January 1, 2014 (CARB 2016). CARB is in the process of developing potential amendments to the off-road diesel engine standards, which are referred to as the Tier 5 rulemaking and aims to reduce NO_X, PM10, and PM2.5 emissions from new, off-road compression-ignition engines compared to what is allowed by the current most stringent Tier 4 emissions standards. CARB plans to bring a rulemaking proposal in 2025 with implementation of the Tier 5 standards expected to begin in 2028 (CARB 2023). This category, however, does not include locomotives, commercial marine vessels, marine engines over 37 kW, or recreational vehicles (CARB 2023k).

CARB ON-ROAD HEAVY-DUTY DIESEL VEHICLES (IN-USE) REGULATION

This regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet PM filter requirements beginning January 1, 2012. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. The regulation applies to nearly all privately and federally owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. In 2014, to void the flexibility options provided in the 2014 amendments to the Truck and Bus regulation, John R. Lawson Rock and Oil of Fresno and the California Trucking Association sued CARB. On January 31, 2018, the court ruled to void the 2014 amendments (CARB 2023i).

CARB SMARTWAY/PHASE I HEAVY-DUTY VEHICLE GREENHOUSE GAS REGULATION

Refer to Section 3.8, Greenhouse Gas Emissions, for a detailed discussion of this regulation CARB Advanced Clean Cars II.

This regulation is intended to have all new passenger cars, trucks and SUVs sold in California to be zero emissions. Additionally, the regulation will rapidly scale down the emissions of these vehicle types starting with the 2026 model year through 2035. The regulations are two-pronged: First, it amends the Zero-emission Vehicle Regulation to require an increasing number of zero-emission vehicles, relying on currently available advanced vehicle technologies, like battery-electric, hydrogen fuel cell electric and plug-in hybrid electric-vehicles, to meet the air quality and climate change emissions standards. Second, the Low-emission Vehicle Regulations were amended to include increasingly stringent standards for gasoline cars and heavier passenger trucks.

A primary goal of the regulation is to substantially reduce air pollution that threatens public health and causes climate change. The regulation is estimated to further develop the ZEV market and provide public health benefits of at least $12 billion over the life of the regulation (by reducing premature deaths, hospitalizations and lost workdays associated with air pollution exposure) (CARB. 2023l).

CARB ADVANCED CLEAN TRUCKS REGULATION

The purpose of this regulation is to accelerate a large-scale transition of zero-emission medium-and heavy-duty vehicles from Class 2b to Class 8. The regulation has two components including a manufacturer sales requirement and a reporting requirement. Manufacturers who certify Class 2b-8 chassis or complete vehicles with combustion engines would be required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales would need to be 55% of Class 2b – 3 truck sales, 75% of Class 4 – 8 straight truck sales, and 40% of truck tractor sales.

Large employers including retailers, manufacturers, brokers and others are required to report information about shipments and shuttle services. Fleet owners, with 50 or more trucks, are required to report about their existing fleet operations. This information will help identify future strategies to ensure that fleets purchase available zero-emission trucks and place them in service where suitable to meet their needs (CARB 2023m).

CARB ADVANCED CLEAN FLEETS REGULATION

This regulation is part of the overall approach to accelerate a large-scale transition to zero-emission medium- and heavy-duty vehicles, working in conjunction with the Advanced Clean Trucks regulation. This regulation is expected to save $26.5 billion in statewide health benefits from criteria pollutant emissions and a net cost savings of $48 billion to fleets.

The regulation applies to fleets performing drayage operations, those owned by State, local, and federal government agencies, and high priority fleets. High priority fleets are entities that own, operate, or direct at least one vehicle in California, and that have either $50 million or more in gross annual revenues, or that own, operate, or have common ownership or control of a total of 50 or more vehicles (excluding light-duty package delivery vehicles). The regulation affects medium- and heavy-duty on-road vehicles with a gross vehicle weight rating greater than 8,500 pounds, off-road yard tractors, and light-duty mail and package delivery vehicles. The Regulation will include milestones of ZEV fleets by groupings and year.

The primary goal of the ACF regulation is to accelerate the market for zero-emission trucks, vans, and buses by requiring fleets that are well suited for electrification, to transition to ZEVs where feasible. CARB was directed to ensure that fleets, businesses, and public entities that own or direct the operation of medium- and heavy-duty vehicles in California purchase and operate ZEVs to achieve a smooth transition to ZEV fleets by 2045 everywhere feasible, specifically to reach:

- 100 percent zero-emissions drayage trucks, last mile delivery, and government fleets by 2035
- 100 percent zero-emissions refuse trucks and local buses by 2040
- 100 percent zero-emissions capable utility fleets by 2040

Achieving these and other milestones will also contribute to meeting the goals in the Governor's Executive Order N-79-20. The ACF regulation continues the progress toward meeting public health and climate goals by reducing emissions from the medium- and heavy-duty vehicles on California roads (CARB 2023n).

On July 6, 2023, CARB announced the Clean Truck Partnership today with the nation's leading truck manufacturers and the Truck and Engine Manufacturers Association that advances the development of zero-emissions trucks for the commercial trucking industry, which includes flexibility for manufacturers to meet emissions requirements while still reaching the state's climate and emission reduction goals. CARB has agreed to work collaboratively with manufacturers to provide reasonable lead time to meet CARB's requirements and before imposing new regulations and to support the development of necessary ZEV infrastructure (CARB 2023o).

On August 30, 2023, CARB submitted the ACF regulatory package to the Office of California Office of Administrative Law that approved the rulemaking and filed with the Secretary of State. As such, the ACF regulation is effective October 1, 2023 (CARB 2023d).

CARB HEAVY DUTY-TRUCK INSPECTION AND MAINTENANCE PROGRAM[5]

Also known as the Clean Truck Check Program, this regulation was adopted in an ongoing effort to meet air quality standards by ensuring heavy-duty vehicle emissions control systems are properly operating throughout the life of

[5] Note that CARB developed the EMFAC2021 and EMFAC2017 interim off-model adjustment factors to account for the emission benefits of California's Heavy-Duty Vehicle Inspection and Maintenance Program ("HD I/M Program" or "program") for use in transportation conformity determinations in California. The EMFAC adjustment factors are documented in CARB's February 17, 2023, document titled EMFAC Off-Model Adjustment Factors to Account for Emission Benefits of the Heavy-Duty Vehicle Inspection and Maintenance Program. CARB reduced the emission reductions from the HD I/M Program by 50 percent for use in regional emissions analyses in transportation conformity determinations. CARB plans to incorporate the reductions associated with the HD I/M Program in the next version of EMFAC. Therefore, on April 10, 2023, CARB sent a letter requesting the USEPA to approve these EMFAC2021 and EMFAC2017 interim off-model adjustment factors before USEPA approves the SIP submissions that incorporate the HD I/M regulations and associated emission reductions from the implementation of the HD I/M Program. CARB developed these EMFAC adjustments to account for the HD I/M Program reducing mobile source emissions in California's air quality plans to help California areas attain the NAAQS and the need for some MPOs to incorporate some of the emission reductions from the adopted HD I/M Program into their regional emissions analyses for transportation conformity determinations prior to CARB incorporating this regulation into the next version of EMFAC.

On May 26, 2023, USEPA approved the HD I/M adjustment factors, which assumed 50 percent of the program reductions to be appropriate (letter from Elizabeth Adams, USEPA to Michael Benjamin, CARB, dated May 26, 2023). Therefore, USEPA approved these EMFAC adjustment factors to be used in transportation conformity determinations that occur prior to USEPA's adequacy finding or approval of motor vehicle emissions budgets into the SIP that incorporate the HD I/M Program reductions, and consistent with USEPA's approval. USEPA approved the HD I/M adjustment factors for EMFAC2021 and EMFAC2017 for regional emissions analyses in transportation plan and TIP conformity determinations. However, these HD I/M adjustments were not approved by USEPA for CO, PM10, or PM2.5 hot-spot analysis for project-level conformity determinations.

the vehicle. The program sets regular testing requirements for all non-gasoline heavy-duty trucks operating in the State and will be tied to DMV registration (CARB 2023f).

DIESEL RISK REDUCTION PLAN

In August 1998, CARB identified particulate emissions from diesel-fueled engines (DPM) as toxic air contaminants, based on data linking DPM emissions to increased risks of lung cancer and respiratory disease. Following the identification process, CARB was required to determine if there was a need for further control, which led to creation of the Diesel Advisory Committee to assist in the development of a risk management guidance document and risk reduction plan. In September 2000, CARB adopted the Diesel Risk Reduction Plan, which recommends control measures to reduce the risks associated with DPM and achieve a goal of 75 percent DPM reduction by 2010 and 85 percent by 2020 (CARB 2000).

Specific statewide regulations designed to further reduce DPM emissions from diesel-fueled engines and vehicles will be evaluated and developed. The goal of these regulations is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce DPM emissions.

CALIFORNIA WELLNESS PLAN

The California Department of Public Health published a statewide Wellness Plan in 2014. The Plan acknowledges that many factors contribute to an individual's health. These factors include the physical environment (housing, neighborhood, healthy food access and environment), educational attainment and employment, economic status, social support, social norms and attitudes, culture, literacy, race/ethnicity. The physical environment is also an indicator of exposure to toxins and transportation where individuals are affected on a daily basis by the air quality of their surroundings (California Department of Public Health 2014).

CARB AIR QUALITY AND LAND USE HANDBOOK

In April 2005, CARB published the Air Quality and Land Use Handbook as an informational and advisory guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. Studies have shown that diesel exhaust and other cancer-causing chemicals emitted from cars and trucks are responsible for much of the overall cancer risk from airborne toxics in California. Reducing diesel particulate emissions is one of CARB's highest public health priorities and the focus of a comprehensive statewide control program that is reducing DPM emissions each year. This document highlights the potential health impacts associated with proximity to air pollution sources so planners explicitly consider this issue in planning processes. The Air Quality and Land Use Handbook includes advisories on where to site new sensitive land uses. Regarding freeways and high-traffic roads, CARB states, "[A]void siting new sensitive land uses within 500 feet of a freeway urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day" (CARB 2005). In 2017, CARB identified and published strategies that planners and other land use decision-makers could implement locally and in the near-term to reduce air pollution exposure near high-volume roadways from all sources, including cars and trucks, as the state pursues infill development while also protecting public health (CARB 2017a).

ASSEMBLY BILL 617

AB 617 (California Health and Safety Code section 40920.6 et seq.) establishes a first-of-its-kind statewide effort for identifying community concerns and implementing community air monitoring and community emissions reduction programs. AB 617 emphasizes the protection of disadvantaged communities burdened

disproportionately by harmful effects of air pollution. As part of AB 617, CARB has implemented the Community Air Protection Program (CAPP) to reduce air pollution and improve public health in communities experiencing disproportionate burdens from exposure to air pollution. In September 2018, CARB selected 10 initial communities statewide to be designated for the development of an air quality monitoring plan or a community emissions reduction program (CERP). Additional communities have been added to the CAPP since 2018. Within the SCAG region, the designated AB 617 communities include:

- Calexico, El Centro, Heber
- East Los Angeles, Boyle Heights, West Commerce
- Eastern Coachella Valley
- North Imperial Phase 1
- San Bernardino, Muscoy
- South East Los Angeles
- South Los Angeles
- Wilmington, West Long Beach, Carson

LOCAL

The SCAG region is comprised of four air basins and five air districts. The four air basins are SCAB, MDAB, SSAB, and the Ventura County portion of SCCAB. The five air districts are MDAQMD, AVAQMD, VCAPCD, SCAQMD, and ICAPCD. The SCAQMD region is home to more than 17 million people–the majority of the approximately 19 million people in the SCAG region (SCAQMD 2023a).

MDAQMD FEDERAL 75 PPB OZONE ATTAINMENT PLAN (WESTERN MOJAVE DESERT NONATTAINMENT AREA)

The Western Mojave Desert nonattainment area (as defined in 40 CFR 81.305) was designated nonattainment for the NAAQS for ozone by USEPA effective on July 20, 2012. The MDAQMD has experienced ambient ozone concentrations in excess of the 8-hour ozone NAAQS. This plan (1) demonstrates that the MDAQMD will meet the primary required Federal ozone planning milestone, attainment of the 75 parts per billion (ppb) 8-hour ozone NAAQS, by July 2027; (2) presents the progress the MDAQMD will make towards meeting all required ozone planning milestones; and (3) discusses the 2015 70 ppb 8-hour ozone NAAQS, preparatory to an expected non-attainment designation for the new NAAQS (MDAQMD 2016b).[6]

MDAQMD FEDERAL 70 PPB OZONE ATTAINMENT PLAN (WESTERN MOJAVE DESERT NONATTAINMENT AREA)

The Western Mojave Desert nonattainment area (as defined in 40 CFR 81.305) was designated nonattainment for the NAAQS for ozone by USEPA effective on October 26, 2015. The MDAQMD has experienced ambient ozone concentrations in excess of the 8-hour ozone NAAQS. This document: (1) demonstrates that the MDAQMD will meet the primary required Federal ozone planning milestone, attainment of the 70 ppb 8-hour ozone NAAQS, by August 2033; (2) presents the progress the MDAQMD will make towards meeting all required ozone planning

[6] Note that the CARB 2018 Updates to the California SIP was reviewed; it provides reference to MDAQMD's 2016 Plan and discusses emission inventories, but it does provide expanded regulatory framework.

milestones; and (3) discusses the 2015 70 ppb 8-hour ozone NAAQS, preparatory to an expected non-attainment designation for the new NAAQS (MDAQMD 2023a).

AVAQMD FEDERAL 75 PPB OZONE ATTAINMENT PLAN (2017)

The AVAQMD has adopted a single attainment plan for ozone. The AVAQMD Federal 8-hour Ozone Attainment Plan, adopted in March 2017, demonstrates that the AVAQMD will meet the primary required federal ozone planning milestones by June 2027, presents the progress the AVAQMD will make towards meeting all required ozone planning milestones, and discusses the 75 part per million 8-hour ozone NAAQS (AVAQMD 2017).

AVAQMD FEDERAL 70 PPB OZONE ATTAINMENT PLAN (2023)

The AVAQMD Federal 2015 8-hour Ozone Attainment Plan included with MDAQMD's 2015 8-hour Ozone Attainment Plan as part of the Western Mojave Desert nonattainment area air plan, submitted to CARB in January 2023, demonstrates that the AVAQMD will meet the primary required federal ozone planning milestones by August 2023, presents the progress the AVAQMD will make towards meeting all required ozone planning milestones, and discusses the 70 part per million 8-hour ozone NAAQS (AVAQMD 2023).

VCAPCD AIR QUALITY MANAGEMENT PLAN

In 2022, the VCAPCD proposed the 2022 Ventura County AQMP. Photochemical air quality modeling performed indicated that Ventura County will attain the 2015 federal 8-hour ozone standard by 2026 using local, state, and federal clean air programs. The 2016 Ventura County AQMP projected attainment of the 2008 federal 8-hour ozone standard by 2020 (VCAPCD 2016, 2017). The 2022 AQMP presents (1) a strategy to attain the 2015 federal 8-hour ozone standard; (2) attainment demonstration for the federal 8-hour ozone standard; and (3) reasonable further progress demonstration for the federal 8-hour ozone standard (VCAPCD 2022).

SCAQMD 2022 AIR QUALITY MANAGEMENT PLAN

The 2022 AQMP seeks to achieve multiple goals in partnership with other entities promoting reductions in criteria pollutant, greenhouse gases, and toxic risk, as well as efficiencies in energy use, transportation, and goods movement. The 2022 AQMP includes the integrated strategies and measures needed to meet the NAAQS. The South Coast Air Basin is classified as an "extreme" nonattainment area and the Coachella Valley is classified as a "severe-15" nonattainment area for the 2015 Ozone NAAQS. The 2022 AQMP was developed to address the requirements for meeting this standard and other issues like windblown dust. The 2022 AQMP was adopted December 2, 2022, by the South Coast AQMD Governing Board (SCAQMD 2022a).

ICAPCD AIR PLANS

At a public meeting held on May 25, 2018, CARB approved the Imperial County 2018 Annual PM2.5 SIP. At a public meeting held on November 13, 2018, the Imperial County 2018 Redesignation Request and Maintenance Plan for PM10. SIPs in the region are utilized to demonstrate that the County is in attainment of previous PM goals, as well as to set new emissions reduction guidelines, goals, and methodologies (CARB 2023p). In response to court decisions, some elements included in the Imperial County 2017 State Implementation Plan for the 2008 8-hour Ozone Standard required updates. CARB staff prepared the 2018 Updates to the California State Implementation Plan (2018 SIP Update) to update SIP elements for nonattainment areas throughout the State as needed. CARB adopted the 2018 SIP Update on October 25, 2018 (CARB 2023q).Fugitive Dust Regulations: SCAQMD, AVAQMD, and MDAQMD Rule 403; VCAPCD Rule 55, Fugitive Dust; ICAPCD Rule 800, ICAPCD Rule 801

The SCAQMD, AVAQMD, and MDAQMD have adopted Rule 403, Fugitive Dust, which requires the implementation of best available fugitive dust control measures during construction and operational activities capable of generating fugitive dust emissions from on-site earth-moving activities, construction/demolition activities, and mobile equipment traveling on paved and unpaved roads (SCAQMD 2005). Similarly, VCAPCD has adopted Rule 55, Fugitive Dust (VCAPCD 2008a), and ICAPCD has adopted Rule 800, General Requirements for Control of Fine Particulate Matter (PM10) (ICAPCD 2012), and Rule 801, Construction and Earthmoving Activities, to reduce fugitive dust (ICAPCD 2005). Windblown dust is also an air quality concern and results from agricultural operations, vehicle travel on unpaved surfaces, grading of previously covered or vegetated areas without reapplication of cover, vegetation or dust suppressants, re-entrained dust from previously settled dust on solar panels, particularly at solar power facilities located in rural, desert, or other locations with unpaved surfaces, and other similar types of operational activities.

SCAQMD, AVAQMD RULE 1401; MDAQMD RULE 1320; VCAPCD RULE 36; ICAPCD RULE 207 AND SCAQMD, AVAQMD RULE 1402; MDAQMD RULE 1520; VCAPCD RULE 73; ICAPCD RULE 403

The SCAQMD has adopted two rules for TACs to limit cancer and non-cancer health risks from facilities located within its jurisdiction. Rule 1401, New Source Review of Toxic Air Contaminants, regulates new or modified facilities (SCAQMD 2017b); and Rule 1402, Control of Toxic Air Contaminants from Existing Sources (SCAQMD 2016b), regulates facilities that are already in operation. Rule 1402 incorporates requirements of the AB 2588 program, including implementation of risk reduction plans for significant risk facilities. In 2017, SCAQMD revised Rule 1401 and 1402 to include more equipment types and industry categories. Under the revised Rule 1401, no permit would be issued for new and modified equipment unless the cancer risk is less than ten in a million using Toxics Best Available Control Technology (TBACT) or less than one in a million without TBACT or if near a school. For Rule 1402, existing facilities under AB 2588 must reduce facility-wide risk if maximum individual cancer risk is greater than 25 in a million. AVAQMD, MDAQMD, VCAPCD, and ICAPCD have adopted similar rules to limit health risks from toxic air contaminants from new, modified, and existing sources (AVAQMD 2002, 2006; MDAQMD 2001, 2021; VCAPCD 1998, 2008b; ICAPCD 2004, 2018).

SCAQMD LOCALIZED SIGNIFICANCE THRESHOLDS

The SCAQMD has published a guidance document called the *Final Localized Significance Threshold Methodology for CEQA evaluations* that is intended to provide guidance when evaluating the localized impacts from mass emissions during construction (SCAQMD 2008). The SCAQMD adopted additional guidance regarding PM2.5 emissions in a document called *Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds* (SCAQMD 2006). This latter document has been incorporated by the SCAQMD into its CEQA significance thresholds and *Final Localized Significance Threshold Methodology*.

3.3.4 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

For the purposes of this 2024 PEIR, SCAG has determined that implementation of Connect SoCal 2024 could result in significant impacts related to air quality if the Plan would exceed the following significance criteria, in accordance with California Environmental Quality Act (CEQA) Guidelines Appendix G:

- Conflict with or obstruct implementation of the applicable air quality plan;

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

AIR QUALITY THRESHOLDS FOR CRITERIA AIR POLLUTANTS

As previously discussed, the SCAG region contains all of the following air districts: SCAQMD, VCAPCD, MDAQMD, AVAQMD, and ICAPCD. Per CEQA Guidelines Section 15064.7 each air district is encouraged to develop and publish significance thresholds that the agency can use in the determination of the significance of environmental effects. Each of the air district's significance thresholds are discussed below (CEQA Guidelines Section15064.7). These thresholds are generally recommended by each air district to be used to determine if further discussion of air quality impacts is needed in an environmental document. If emissions of criteria pollutants are below these levels, then air quality impacts are generally considered to be less than significant.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT THRESHOLDS

SCAQMD prepared air quality significance thresholds to compare the mass daily emissions in pounds per day (lbs/day) from construction and operation for NOx, VOC, PM10, PM2.5, SOx, CO, and Lead. SCAQMD's significance thresholds are summarized in **Table 3.3-9, SCAQMD Air Quality CEQA Significance Thresholds**.

TABLE 3.3-9 **SCAQMD Air Quality CEQA Significance Thresholds**

POLLUTANT	CONSTRUCTION (LBS/DAY)	OPERATION (LBS/DAY)
NOx	100	55
VOC	75	55
PM10	150	150
PM2.5	55	55
SOx	150	150
CO	550	550
Lead	3	3

Source: SCAQMD 2023b

VENTURA COUNTY AIR POLLUTION CONTROL DISTRICT THRESHOLDS

VCAPCD published the Ventura County Air Quality Assessment Guidelines in October 2003 that include the VCAPCD recommended significance thresholds. According to the Guidelines, ROG and NOx emissions have a threshold of 5 lbs/day in the Ojai Planning Area and 25 lbs/day in the remainder of Ventura County.[7] For all other criteria air pollutants, the District uses the ambient air quality standards as thresholds (VCAPCD 2003).

[7] The City of Simi Valley, within the VCAPCD, uses a threshold of 13.7 tons/year for ROG and NOx emissions.

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT THRESHOLDS

MDAQMD published the MDAQMD CEQA and Federal Conformity Guidelines in August 2016 that includes the MDAQMD recommended air quality significance thresholds for CO, NOx, VOC, SOx, PM10, PM2.5, H2S, and Lead in mass daily and annual emissions. The MDAQMD and AVAQMD have set the same annual and daily thresholds, which are summarized in **Table 3.3-10**, **MDAQMD and AVAQMD Air Quality CEQA Significance Thresholds** (MDAQMD. 2016b).

TABLE 3.3-10 **MDAQMD and AVAQMD Air Quality CEQA Significance Thresholds**

POLLUTANT	ANNUAL THRESHOLD (TONS)	DAILY THRESHOLD (POUNDS)
CO	100	548
NOx	25	137
VOC	25	137
SOx	25	137
PM10	15	82
PM2.5	12	65
H_2S	10	54
Lead	0.6	3

Sources: MDAQMD 2016a; AVAQMD 2016

ANTELOPE VALLEY AIR QUALITY MANAGEMENT DISTRICT THRESHOLDS

AVAQMD published the AVAQMD CEQA and Federal Conformity Guidelines in August 2016 that includes the AVAQMD recommended air quality significance thresholds for CO, NOx, VOC, SOx, PM10, PM2.5, H2S, and Lead in mass daily and annual emissions (AVAQMD 2016). Table 3.3-10 summarizes the air quality thresholds for both the AVAQMD and MDAQMD, as their annual and daily thresholds are the same.

IMPERIAL COUNTY AIR POLLUTION CONTROL DISTRICT THRESHOLDS

ICAPCD prepared their final CEQA Air Quality Handbook in December 2017, which includes operational air quality thresholds for Tier I and Tier II projects.[8] Tier I projects do not exceed thresholds and, as a result, would not be required to prepare a Comprehensive Air Quality Analysis as emissions would be less than significant. Tier II projects exceed these thresholds and would be required to implement all standard and discretionary mitigation measures and must, at a minimum, prepare a Comprehensive Air Quality Analysis (ICAPCD 2017a). **Table 3.3-11**, **ICAPCD Operational Air Quality CEQA Significance Thresholds**, summarizes the District's operational thresholds.

[8] ICAPCD recommends that individual projects qualitatively address construction emissions and are required to implement the District's standard mitigation measures for constriction equipment and fugitive PM2.5.

TABLE 3.3-11 **ICAPCD Operational Air Quality CEQA Significance Thresholds**

POLLUTANT	DAILY THRESHOLD
NOx and ROG	137 lbs/day
PM10 and SOx	150 lbs/day
CO and PM2.5	550 lbs/day

Source: ICAPCD 2017a

AIR QUALITY THRESHOLD FOR TOXIC AIR CONTAMINANTS

TACs are hazardous air pollutants that may reasonably cause cancer, development effects, or other serious or irreversible acute or chronic health effects in humans. In the analysis below, DPM, a type of TAC, is evaluated to determine the cancer risk posed to sensitive groups in the SCAG region. The SCAQMD (2023b), VCAPCD (2003), MDAQMD (2016a), and AVAQMD (2016) have all recommended a maximum incremental cancer risk CEQA significance threshold of 10 in 1 million.[9] As a result, if an individual's probability of contracting cancer over their lifetime increases by 10 or more chances in 1 million as a result of a project's emissions, the project would have a significant impact on health risk.[10]

METHODOLOGY

Chapter 2, *Project Description*, describes the Plan's vision, goals, policies, forecasted regional development pattern, policies and strategies, and individual transportation projects and investments. The Plan aims to increase mobility, promote sustainability, and improve the regional economy. Although land use development is anticipated to occur within the region even without the Plan, the Plan could influence growth, including distribution patterns. To address this, the 2024 PEIR includes an analysis on the implementation of policies and strategies as well as potential projects and evaluates how conditions in 2050 under the Plan would differ from existing conditions.

This section discusses the potential impacts of Connect SoCal 2024 on air quality, identifies mitigation measures for potential impacts, and evaluates residual impacts in accordance with CEQA Guidelines Appendix G. Air quality within the SCAG region was evaluated at a programmatic level of detail, in relation to the AQMPs for the five air quality districts and the general plans of the six counties and 191 cities within the SCAG region, a review of published and unpublished literature germane to the SCAG region, as well as a review of the previously certified PEIR for the 2020-2045 RTP/SCS (SCAG 2020a). The analysis of air quality considered public comments received on the NOP and feedback and discussions at the various public and stakeholder outreach meetings.

The CEQA significance determination for Plan's air quality impacts is based on a comparison between future (2050) with the Plan and the 2019 actual baseline (e.g., existing conditions). The comparison of air quality impacts in the future with the Plan as compared to future with no Plan is included in Chapter 4, *Alternatives*, of this PEIR.

[9] ICAPCD does not have a quantified cancer risk threshold, instead individual projects that meet Tier II would be required to prepare a health risk assessment which should be prepared in consultation of agency staff.

[10] See e.g., SCAQMD 2023b.

CONSTRUCTION

Implementation of Connect SoCal 2024 could result in the construction of various transportation projects and land use projects over the lifetime of the Plan. Construction emissions associated with each individual project will generally be short-term, temporary, and are limited to the project construction phase (although some project construction phases can extend for multiple years). The sources associated with these emissions include construction equipment, employee and vendor vehicles (e.g., on-road trucks for construction material delivery), demolition, grading and other ground-disturbing activities, application of paint and other coatings, paving, among others. Since descriptions, locations, and scale of future activities involving construction of individual projects are unknown at this time, it is not possible and would be speculative to quantify specific project-level construction emissions. Additionally, SCAG has no land use decision-making or implementation authority over individually proposed transportation or potential land use projects.

However, to illustrate the potential magnitude of air quality impacts from a range of potential construction scenarios, emissions were calculated for four hypothetical template scenarios for four differently-sized individual land use projects in six locations that represent each County in SCAG's jurisdiction[11] based on typical assumptions of construction activities using the California Emissions Estimator Model (CalEEMod) version 2022.1.1[12] and the CARB EMFAC2021 model. See **Appendix B-1** for the model output files. Four construction scenarios were used to demonstrate potentially significant construction air quality impacts in the absence of a known specific construction location and scale.[13] (The scenarios would be the same regardless of the Plan.) The four scenarios are as follows:

- **Low-end scenario (LE scenario):** expected less than significant impacts without mitigation; crew of 24 workers, 13 pieces of heavy-duty off-road construction equipment, and 50 one-way truck trips per day.
- **Low-mid-range scenario (LM scenario):** expected potentially significant impacts but mitigated to less than significant impacts with some typical mitigation; crew of 53 workers, 15 pieces of heavy-duty off-road construction equipment, and 150 truck one-way truck trips per day.
- **High-mid-range scenario (HM scenario):** expected significant impacts but mitigated to less than significant impacts with substantial mitigation; crew of 160 workers, 19 pieces of heavy-duty off-road construction equipment, and 500 truck trips per day.
- **High-end scenario (HE scenario):** expected significant impacts and may result in potentially significant and unavoidable impacts; crew of 237 workers, 21 pieces of heavy-duty off-road construction equipment, and 750 truck trips per day.

These four scenarios were analyzed for four analysis years: 2025, 2032, 2037, and 2050. The year 2025 corresponds to the NAAQS attainment year for the 2012 annual PM2.5 federal standard (for serious nonattainment designation), the years 2032 and 2037 correspond to attainment years for the 2008 and 2015 8-hour ozone federal standards (for the extreme nonattainment designation), and the year 2050 is the Connect SoCal 2024 horizon year. It is important to note that overlapping construction activities among the four scenarios were not assumed as these scenarios served as examples of singular projects. It was also assumed that none of four scenarios would encounter contaminated soil and that in-situ soil remediation, removal, or off-site soil disposal would not be

[11] Locations represent each County within SCAG's jurisdiction and are only used to generate area-specific emission factors which include mobile fleet and VOC regulations that would apply anywhere in the respective County.

[12] The most recent version of CalEEMod will be used at the time modeling commences.

[13] CalEEMod 2022.1.1 - Appendix G, Default Data Tables, used to create construction scenario assumptions based on the 1-acre, 3-acre, 10-acre and 15-acre site sizes for equipment and worker values. Truck trip values based on 125 cubic yards/day/acre of demolition debris, 75 cubic yards/day/acre of site preparation debris, and 200 cubic yards/day/acre of soil hauling.

needed before construction began. However, this section discusses the potential regional air quality impacts from overlapping construction emissions from individual projects with operational emissions.

OPERATIONS

This analysis focuses on air pollution from on-road motor vehicles in two perspectives: daily emissions and pollutant concentrations. The analysis is based upon air quality modeling, performed by SCAG, using EMFAC2021. Air quality modeling that produces criteria pollutant emissions for the SCAG region and by county is based on SCAG's activity-based transportation modeling and networks built for the existing conditions (2019) and the Plan.

The methodology for determining the level of significance of air quality impacts from operations compares existing emissions to the expected future emissions with the Plan, as required in CEQA Guidelines Section 15126.2(a). The criteria above were applied to compare current conditions in year 2019, year 2030, year 2040 and to the 2050 Plan conditions. Analysis of the potential air quality impacts of the Plan was conducted based on SCAG's activity-based Regional Travel Demand Model, evaluation of relevant AQMPs/SIPs, and a Mobile source HRA to determine if there will be a significant impact. NO2 air dispersion modeling and nitrogen deposition modeling were conducted primarily for disclosure purposes and to inform the discussion of health effects and potential biological resources impacts.

In accordance with the *Sierra Club v. County of Fresno* (i.e., *Friant Ranch*) decision, when air quality impacts are found to be significant, the health implications of the significant emissions should be disclosed. In an absence of technical guidance on how analyze and disclose the health implications in CEQA from all five air districts in the SCAG region, this is achieved for particulate matter by a quantitative health risk assessment in this PEIR. For ozone and its precursors (NOx and VOC), there in an absence of CEQA guidance from all five air districts in the SCAG region on how to perform this type of analysis quantitively. Therefore, SCAG is analyzing the health implications of ozone emissions both qualitatively and quantitatively by using NO2 as a proxy.

The NO2 concentrations, nitrogen deposition and cancer risk analyses were performed quantitatively using the USEPA's AERMOD dispersion model and the Hot Spots Analysis and Reporting Program Version 2 (HARP2) Risk Assessment Standalone Tool (RAST) model. The HRA analysis is consistent with the 2015 guidance provided by OEHHA for Human Health Risk Assessment (HHRA). The AERMOD concentration algorithms were used for the NO2 dispersion analysis and the HRA, and the wet and dry gaseous deposition algorithms were used for the nitrogen deposition analysis. Emissions of NOx, NH3, and DPM were estimated from CARB's EMFAC2021 model to be used in these analyses. EMFAC2021 was developed to estimate emissions from mobile sources and includes County-specific data, such as fleet mix in order to estimate criteria air pollutants. See Appendix B-2 for more detail.

In *California Building Industry Association (CBIA) vs. Bay Area Air Quality Management District (BAAQMD)*, the California Supreme Court ruled that agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents unless the proposed project risks exacerbating those environmental hazards or conditions that already exist.[14] Therefore, emissions from the existing transportation network, including freeways, are generally not considered impacts under CEQA unless the project

[14] See Cal. Building Industry Assn. v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369; see also Cal. Building Industry Assn. v. Bay Area Air Quality Management District (2016) 2 Cal.App.5th 1067.

exacerbates the existing environmental conditions.[15] Since Connect SoCal 2024 includes transportation projects, including freeway improvements, that could occur within 500 feet of sensitive receptors (thereby exacerbating an existing condition), this section analyzes the risk posed from existing freeways on sensitive receptors.

As discussed in Chapter 2, *Project Description*, and Section 3.0, *Introduction to Analysis*, Connect SoCal 2024 includes Regional Planning Policies and Implementation Strategies, some of which will effectively reduce impacts in the various resource areas. Furthermore, compliance with all applicable laws and regulations (as set forth in the Regulatory Framework) would be reasonably expected to reduce impacts of the Plan (see CEQA Guidelines Section 15126.4(a)(1)(B)). As discussed in Section 3.0, where remaining potentially significant impacts are identified, SCAG mitigation measures are incorporated to reduce these impacts. If SCAG cannot mitigate impacts of the Plan to less than significant, project-level mitigation measures are identified which can and should be considered and implemented by lead agencies as applicable and feasible.

IMPACTS AND MITIGATION MEASURES

IMPACT AQ-1 **Conflict with or obstruct implementation of the applicable air quality plan.**

Significant and Unavoidable Impact (Except for Plan's Consistency with Federal Transportation Conformity Requirements) – Mitigation Required

COMPLIANCE WITH FEDERAL TRANSPORTATION CONFORMITY REQUIREMENTS

Connect SoCal 2024 is required to meet the federal transportation conformity requirements in order for the region to move forward with critical transportation and transit projects. Transportation conformity is required under the federal CAA Section 176(c) to ensure that federally supported transportation activities such as transportation plans, programs, investments, projects (i.e., highway, highway safety, transit, and other surface transportation projects) conform to or are consistent with the purpose of the applicable AQMP or SIP.

Transportation conformity for the purpose of the air quality plan or SIP means that federally supported transportation plans, programs, and projects are required to not create new violation of the federal air quality standards, worsen the existing violation, or delay the timely attainment of the applicable federal air quality standards. The Transportation Conformity Regulations apply nationwide to areas that are designated nonattainment, and those re-designated to attainment after 1990, maintenance areas, with plans developed for the specific transportation-related criteria air pollutants (40 CFR Section 93.102).

The federal CAA establishes air quality standards and planning requirements for various criteria air pollutants. As described in the Regulatory Framework, when a region is in nonattainment for any of the six criteria air pollutants relative to the applicable NAAQS, the federal CAA requires states to develop SIPs to achieve the federal standard. The AQMPs are required as part of the SIP. Within the SCAG region, the 8-hour federal ozone standards are designated as nonattainment for all six counties. San Bernardino, Riverside, Orange, Los Angeles, and Imperial Counties are all designated as nonattainment for PM2.5. Additionally, San Bernardino, Riverside, and Imperial

[15] Note that as discussed in Section 3.15.3, Public Services – Schools, CEQA review of school construction generally does require an evaluation of the effects of existing air quality exposure on pupils, and to the extent the health risk is unacceptable, the school would not be built. CEQA also provides limited protection and requires analysis of impacts of the existing environment on certain housing development projects exercising exemptions under Pub. Res. Code Sections 21159.21(f), (h), 21159.22(a), (b)(3), 21159.23 (a)(2)(A), 21159.24(a)(1), (3), and 21155.1(a)(4), (6).

Counties are designated as nonattainment for PM10. As a result, all the SIPs in the SCAG region focus on reducing emissions of ozone and its precursors such as reactive organic gases and particulate matter pollution. The following air quality plans are applicable to Connect SoCal 2024: 2022 SCAQMD AQMP, AVAQMD Federal 75 ppb Ozone Attainment Plan (2017), AVAQMD Federal 70 ppb Ozone Attainment Plan (2023), MDAQMD Federal 75 ppb Ozone Attainment Plan (2017), MDAQMD Federal 70 ppb Ozone Attainment Plan (2023), 2022 Ventura County AQMP, and Imperial County 2018 Annual PM2.5 State Implementation Plan.

The goals of the AQMPs and SIPs are to establish a strategy for achieving the standards by a set date by listing all feasible control measures, including TCMs. These control measures help advance the attainment date and are financially, economically, and socially feasible. As standards become more stringent over time, achieving the standards becomes a moving target that the air quality districts, and air-related plans must continue to chase.

SCAG coordinates with air districts in the region to ensure that air quality planning and AQMPs (and air pollution control plans) are consistent and comprehensively address air pollution from all sources (as appropriate) in the SCAG region. Upon approval by the USEPA, the motor vehicle emissions budgets in the applicable AQMPs/SIPs will become the functioning emission caps for transportation conformity for future RTPs, Federal Transportation Improvement Programs, and amendments or updates to such plans/programs. Pursuant to the California Health and Safety Code, SCAG is responsible for preparing a portion of air plans such as the 2022 AQMP for the South Coast Air Basin relating to the RTP/SCS and TCMs, which is commonly known as "Appendix IV-C". In addition to writing a portion of the SCAQMD's 2022 AQMP on the region's RTP/SCS and TCMs as they related to air quality, SCAG's role in SCAQMD's air plan development process included providing the socio-economic growth forecast and regional transportation demand model output data to the SCAQMD for use in estimating and forecasting emission inventories and airshed modeling; and vehicle activity data to CARB for use in developing on-road emissions. SCAG provided this data to the respective agencies.

Furthermore, SCAG's Transportation Conformity Working Group (TCWG) serves as a mechanism for interagency consultation for RTP/SCS issues between representatives from SCAG, federal and state agencies such as USEPA, Federal Highway Administration (FHWA), Federal Transit Administration (FTA), California Department of Transportation, CARB, and local air quality and transportation agencies in the SCAG region. Connect SoCal 2024, including the associated transportation conformity analysis were discussed at the monthly meetings of the TCWG for interagency consultation (SCAG 2023c).

Based on the required transportation conformity analysis conducted for Connect SoCal 2024, the Plan demonstrates positive transportation conformity. Specifically, the Plan passes the four required transportation conformity tests, namely: (1) regional emissions analysis [i.e., the Plan do not exceed any applicable emissions caps for all applicable air pollutants; for all applicable milestone, attainment, and planning horizon years; and in all nonattainment and maintenance areas within the SCAG region set forth in existing AQMPs/SIPs]; (2) fiscal constraint [i.e., the Plan demonstrates financial constraint in the financial plan by identifying all transportation revenues including local, state, and federal sources available to meet the region's programming totals]; (3) timely implementation of TCMs [i.e., all TCM projects and programs in the Plan were given funding priority, are expected to be implemented on schedule, and in the case of any delays, any obstacles to implementation have been or are being overcome], and (4) interagency consultation and public involvement [i.e., the Plan follows the strategies in SCAG's Public Participation Plan and conducts interagency consultation on the transportation conformity analysis for the Plan with SCAG's TCWG]. The transportation conformity determination for Connect SoCal 204 is anticipated to receive final federal approval from FHWA/FTA in June 2024. See the Transportation Conformity Analysis Technical Report of Connect SoCal 2024 for more discussion. Therefore, the Plan is not expected to conflict with

or obstruct implementation of the existing applicable air quality plans for federal transportation conformity purposes.

COMPLIANCE WITH APPLICALBE AIR QUALITY PLAN FOR ALL OTHER PURPOSES

Connect SoCal 2024 includes land use strategies integrated with transportation strategies and investments. With respect to achieving emission reductions, the Plan would reduce emissions air pollutants and toxic air emissions as it has a greater emphasis on compact development, additional transportation strategies including those more integrated with supporting active transportation, additional investments for transit and passenger rail, and a greater emphasis improving the public health and ensuring the quality of life (as discussed in Chapter 2, *Project Description*). This is evident by the Plan's transportation project types that allocate funding and planning efforts on trail access, regional greenway network, regional and local bikeway network, and pedestrian improvements by using a "complete streets" approach and "15-minute communities"; transit (rail, bus) improvements and new facilities; dedicated lanes; mobility hubs; universal basic mobility policies and strategies; rideshare/vanpool programs; high-occupancy vehicle (HOV) lanes; traffic calming and signal improvements; and streetscape/landscape projects. Implementation of land use strategies in the Plan could reduce emissions in both mobile and stationary sources by increasing density and reducing VMT per capita (see Section 3.8, *Greenhouse Gas Emissions*, for additional discussion on per capita VMT reduction). Additionally, land use strategies in the Plan seek to integrate and balance the region's strategic transportation investments and land use choices and are coordinated with the committed and projected transportation investments in the region that emphasize system preservation and enhancement, active transportation, and land use integration. These efforts are supportive of goals of air quality to reduce air pollution and improve public health and welfare. Nonetheless, given the geographic size and long-term nature of the Plan, complexity of air quality conditions and planning challenges, and potential for unforeseen circumstances to occur through the 2050 Plan horizon, it is possible that emissions and incidental air pollution events could result in substantial air quality impacts that could collectively constitute a violation of air quality standards within the respective air basins in the region and conflict with the applicable air quality plan.

As discussed above, at the regional level, the Plan meets the federal transportation conformity requirements and therefore, would not conflict with or obstruct applicable AQMPs, local SIPs, and air plans. However, federally supported individual transportation projects are required to perform their own project-level conformity. In PM2.5 and/or PM10 nonattainment and maintenance areas within the SCAG region (except the Ventura County portion of the South Central Coast Air Basin), SCAG's TCWG determines if a federally supported transportation or transit project is considered a "Project of Air Quality Concern" (POAQC) (SCAG 2023d). For example, if a new highway project included in the Plan's Project List involves significant levels of diesel vehicle traffic, it could be determined by the TCWG as a POAQC that may need a project-level PM hot spot analysis (40 CFR 93.123(b)). PM hot spot analyses are required only for projects of local air quality concerns. As such, the potential exists that individual transportation projects in the Plan could result in conflicts with or obstruction of implementation of applicable air quality plans. Therefore, impacts with regards to project-level conformity are considered significant and mitigation measures are required.

MITIGATION MEASURES

SCAG MITIGATION MEASURES

See **SMM-GHG-1** and **SMM-GHG-2.**

SMM-AQ-1 SCAG shall continue to support and provide information on regional air quality planning and related issue areas in the region. SCAG staff shall also continue to work with the U.S. Environmental Protection Agency, California Air Resources Board, and the air districts within the SCAG region and provide updates to relevant stakeholders on regional air quality planning and related issue areas through regional collaboration forums such as SCAG's Transportation Conformity Working Group.

PROJECT-LEVEL MITIGATION MEASURES

PMM-AQ-1 In accordance with provisions of sections 15091(a)(2) and 15126.4(a)(1)(B) of the State CEQA Guidelines, a Lead Agency for a project can and should consider mitigation measures to reduce substantial adverse effects related to violating air quality standards. Such measures may include the following or other comparable measures identified by the Lead Agency:

a) Minimize land disturbance.

b) Suspend grading and earth moving when wind gusts exceed 25 miles per hour unless the soil is wet enough to prevent dust plumes.

c) Cover trucks when hauling dirt.

d) Stabilize the surface of dirt piles if not removed immediately.

e) Limit vehicular paths on unpaved surfaces and stabilize any temporary roads.

f) Minimize unnecessary vehicular and machinery activities.

g) Sweep paved streets at least once per day where there is evidence of dirt that has been carried on to the roadway.

h) Revegetate disturbed land, including vehicular paths created during construction to avoid future off-road vehicular activities.

i) On Caltrans projects, Caltrans Standard Specifications 10-Dust Control, 17-Watering, and 18-Dust Palliative shall be incorporated into project specifications.

j) Assemble a comprehensive inventory list (i.e., make, model, engine year, horsepower, emission rates) of all heavy-duty off-road (portable and mobile) equipment (50 horsepower [hp] and greater) that could be used an aggregate of 40 or more hours for the construction project. Prepare a plan for approval by the applicable air district demonstrating achievement of the applicable percent reduction for a CARB-approved fleet.

k) Ensure that all construction equipment is properly tuned and maintained.

l) Minimize idling time to 5 minutes—saves fuel and reduces emissions.

m) Provide an operational water truck on-site at all times. Use watering trucks to minimize dust; watering should be sufficient to confine dust plumes to the project work areas. Sweep paved streets at least once per day where there is evidence of dirt that has been carried on to the roadway.

n) Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.

o) Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.

p) Obtain CARB Portable Equipment Registration with the state or a local district permit for portable engines and portable engine-driven equipment units used at the project work site, with the exception of on-road and off-road motor vehicles. Arrange appropriate consultations with CARB or the local air district to determine registration and permitting requirements prior to equipment operation at the site.

q) Use Tier 4 Final equipment or better for all engines above 50 hp. In the event that construction equipment cannot meet to Tier 4 Final or better engine certification, the Project representative or contractor must demonstrate through future study with written findings supported by substantial evidence that is approved by the project's lead agency before using other technologies/strategies. Alternative applicable strategies may include, but would not be limited to, construction equipment with Tier 4 Interim or reduction in the number and/or horsepower rating of construction equipment and/or limiting the number of construction equipment operating at the same time. All equipment must be tuned and maintained in compliance with the manufacturer's recommended maintenance schedule and specifications. All maintenance records for each equipment and their contractor(s) should make available for inspection and remain on-site for a period of at least two years from completion of construction, unless the individual project can demonstrate that Tier 4 Final or better engines would not be required to mitigate emissions below significance thresholds. Project sponsors should also consider including ZE/ZNE technologies where appropriate and feasible or higher tier standard diesel equipment as it becomes developed and feasible.

r) Projects located within the South Coast Air Basin and the Coachella Valley should consider applying for South Coast AQMD "SOON" funds which provides funds to applicable fleets for the purchase of commercially available low-emission heavy-duty engines to achieve near-term reduction of NOx emissions from in-use off-road diesel vehicles.

s) Projects located within AB 617 communities should review the applicable Community Emissions Reduction Plan (CERP) for identification of additional feasible mitigation that can be applied to individual projects.

t) Where applicable, projects should provide information about air quality related programs to schools, including the Environmental Justice Community Partnerships (EJCP), Clean Air Ranger Education (CARE), and Why Air Quality Matters programs.

u) Projects should work with local cities and counties to install adequate signage that prohibits truck idling in certain locations (e.g., near schools and sensitive receptors).

v) As applicable for airport projects, the following measures should be considered:

- Considering operational improvements to reduce taxi time and auxiliary power unit usage, where feasible. Additionally, consider single engine taxing, if feasible as allowed per Federal Aviation Administration guidelines.

- Set goals to achieve a reduction in emissions from aircraft operations over the lifetime of the proposed project.
- Use ground service equipment (GSE) that can operate on battery-power. If using electric equipment is not feasible, require the use of alternative fuel, the cleanest gasoline equipment, or Tier 4 Final, at a minimum.

w) As applicable for port projects, the following measures should be considered:

- Develop specific timelines for transitioning to zero-emissions cargo handling equipment (CHE).
- Develop interim performance standards with a minimum amount of CHE replacement each year to ensure adequate progress.
- Use short side electric power for ships, which may include tugboats and other ocean-going vessels or develop incentives to gradually ramp up the usage of shore power.
- Install the appropriate infrastructure to provide shore power to operate the ships. Electrical hookups should be appropriately sized.
- Maximize participation in the Port of Los Angeles' Vessel Speed Reduction Program or the Port of Long Beach's Green Flag Initiation Program in order to reduce the speed of vessel transiting within 40 nautical miles of Point Fermin.
- Encourage the participation in the Green Ship Incentives.
- Offer incentives to encourage the use of on-dock rail.

x) As applicable for rail projects, the following measures should be considered:

- Provide the highest incentives for electric locomotives and then locomotives that meet Tier 5 emission standards with a floor on the incentives for locomotives that meet Tier 4 emission standards.

y) Projects that will introduce sensitive receptors within 500 feet of freeways and other sources should consider installing high-efficiency or enhanced filtration units, such as Minimum Efficiency Reporting Value (MERV) 13 or better. Installation of enhanced filtration units can be verified during occupancy inspection prior to the issuance of an occupancy permit.

z) Develop an ongoing monitoring, inspection, and maintenance program for the MERV filters.

- Disclose potential health impacts to prospective sensitive receptors from living in close proximity to freeways or other sources of air pollution and the reduced effectiveness of air filtration systems when windows are open or residents are outside.
- Identify the responsible implementing and enforcement agency to ensure that enhanced filtration units are installed on-site before a permit of occupancy is issued.
- Disclose the potential increase in energy costs for running the HVAC system to prospective residents.
- Provide information to residents on where MERV filters can be purchased.
- Provide recommended schedule (e.g., every year or every six months) for replacing the enhanced filtration units.

- Identify the responsible entity such as future residents themselves, Homeowner's Association, or property managers for ensuring enhanced filtration units are replaced on time.
- Identify, provide, and disclose ongoing cost-sharing strategies, if any, for replacing the enhanced filtration units.
- Set criteria for assessing progress in installing and replacing the enhanced filtration units; and
- Develop a process for evaluating the effectiveness of the enhanced filtration units.

aa) Consult the SCAG Environmental Justice Toolbox available on the SCAG's Environmental Justice webpage for potential measures to address impacts to low-income and/or communities of color.

bb) The following criteria related to diesel emissions shall be implemented on by individual project sponsors as appropriate and feasible:

- Diesel nonroad vehicles on site for more than 10 total days shall have either (1) engines that meet EPA on road emissions standards or (2) emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85%.
- Diesel generators on site for more than 10 total days shall be equipped with emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85%.
- Nonroad diesel engines on site shall be Tier 2 or higher.
- Diesel nonroad construction equipment on site for more than 10 total days shall have either (1) engines meeting EPA Tier 4 nonroad emissions standards or (2) emission control technology verified by EPA or CARB for use with nonroad engines to reduce PM emissions by a minimum of 85% for engines for 50 hp and greater and by a minimum of 20% for engines less than 50 hp.
- The construction contractor shall maintain a list of all diesel vehicles, construction equipment, and generators to be used on site. The list shall include the following:
  i. Contractor and subcontractor name and address, plus contact person responsible for the vehicles or equipment.
  ii. Equipment type, equipment manufacturer, equipment serial number, engine manufacturer, engine model year, engine certification (Tier rating), horsepower, engine serial number, and expected fuel usage and hours of operation.
  iii. For the emission control technology installed: technology type, serial number, make, model, manufacturer, EPA/CARB verification number/level, and installation date and hour-meter reading on installation date.
- Establish generator sites and truck-staging zones for vehicles waiting to load or unload material on site. Such zones shall be located where diesel emissions have the least impact on abutters, the general public, and especially sensitive receptors such as hospitals, schools, daycare facilities, elderly housing, and convalescent facilities.
- Maintain a monthly report that, for each on road diesel vehicle, nonroad construction equipment, or generator onsite, includes:

i. Hour-meter readings on arrival on-site, the first and last day of every month, and on off-site date.

ii. Any problems with the equipment or emission controls.

iii. Certified copies of fuel deliveries for the time period that identify:

1. Source of supply

2. Quantity of fuel

3. Quantity of fuel, including sulfur content (percent by weight)

cc) Promote energy efficiency and exceed Title-24 Building Envelope Energy Efficiency Standards (California Building Standards Code):

- Install programmable thermostat timers
- Obtain Third-party HVAC commissioning and verification of energy savings (to be grouped with exceedance of Title 24).
- Install energy efficient appliances (Typical reductions for energy-efficient appliances can be found in the Energy Star and Other Climate Protection Partnerships Annual Reports.)
- Install higher efficacy public street and area lighting
- Limit outdoor lighting requirements
- Replace traffic lights with LED traffic lights
- Establish onsite renewable or carbon neutral energy systems – generic, solar power and wind power
- Utilize a combined heat and power system

dd) Promote transportation efficiency. The following measures can be used to increase transportation efficiency:

- Locate project near bike path/bike lane
- Provide pedestrian network improvements, such as interconnected street network, narrower roadways and shorter block lengths, sidewalks, accessibility to transit and transit shelters, traffic calming measures, parks and public spaces, minimize pedestrian barriers.
- Provide traffic calming measures, such as:

i. Marked crosswalks

ii. Count-down signal timers

iii. Curb extensions

iv. Speed tables

v. Raised crosswalks

vi. Raised intersections

vii. Median islands

viii. Tight corner radii

ix. Roundabouts or mini-circles

x. On-street parking

xi. Chicanes/chokers

- Create urban non-motorized zones
- Provide bike parking in non-residential and multi-unit residential projects
- Dedicate land for bike trails
- Limit parking supply through:

i. Elimination (or reduction) of minimum parking requirements

ii. Creation of maximum parking requirements

iii. Provision of shared parking

- Require residential area parking permit.
- Provide ride-sharing programs

i. Designate a certain percentage of parking spacing for ride sharing vehicles

ii. Designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles

iii. Providing a web site or messaging board for coordinating rides

iv. Permanent transportation management association membership and finding requirement.

ee) Lengthen the construction period during smog season (May through October), to minimize the number of vehicles and equipment operating at the same time.

ff) Install signage containing the complaint number of the local air district where construction activities are located at the construction sites.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

As previously discussed, the Plan, for federal transportation conformity purposes, conforms to the applicable AQMPs/SIPs in the SCAG region, and the Plan's regional emissions would be below the applicable emissions caps of all applicable criteria pollutants as set forth in the applicable AQMPs/SIPs that are approved by or pending approval of USEPA, for all applicable milestones, attainment, and planning horizon years, and in all 26 nonattainment and maintenance areas within the SCAG region. However, while the Plan demonstrates positive transportation conformity and complies with the federal Transportation Conformity Regulations, it is not possible or feasible to determine if individual projects would conflict with to obstruct implementation of applicable air quality plans. Given the uncertainties regarding the nature and location of future development, this 2024 PEIR identifies SCAG mitigation measures and project-level mitigation measures.

At the project-level, lead agencies can and should consider the identified project-level mitigation measures during subsequent review of transportation and land use projects as appropriate and feasible. While the mitigation measures will reduce the impacts related to consistency with air plans (with the exception of federal transportation conformity), due to the regional nature of the analysis, unknown site conditions and project-specific details, and

SCAG's lack of land use authority over individual projects, SCAG finds that the impact could be ***significant and unavoidable*** even with mitigation.

IMPACT AQ-2 **Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.**

Significant and Unavoidable Impact – Mitigation Required

At the regional level, construction criteria pollutant emissions vary year to year and may be similar to existing or greater or less, often depending on the economy. At the regional level, operational criteria pollutant emissions would be mostly reduced compared to existing conditions. In years 2030, 2040, and 2050, when compared to existing conditions, on-road mobile source emissions would generally decrease, with the exception of PM10 emissions in Riverside County, despite increasing traffic. On-road mobile source particulate matter emissions would remain the same or decrease from existing conditions in the other counties. Within the SCAB (which is likely indicative of the region as a whole), SCAQMD indicates that total pollutant emissions are being reduced through at least 2050, except for SOx and PM2.5, which are expected to remain approximately the same.

CONSTRUCTION EMISSIONS

Over the 20-year lifetime of the Plan, various transportation and development projects would be constructed. These construction activities would result in ongoing emissions of air pollutants including ROG, NOx, SO2, PM10 and PM2.5. Construction emissions associated with each individual project are generally short-term, temporary, and are limited to the project construction phase and within project fence line. The sources associated with these emissions include construction equipment, vehicle trip emissions generated by worker vehicles, haul trucks and vendor trucks, building activities, such as the paving of asphalt and application of paint and other surface coatings, and fugitive dust emissions from demolition, grading and other ground-disturbing activities. Typically, larger projects are associated with larger emissions during construction. As described in the methodology section above, the magnitude of air quality impacts from a series of potential construction scenarios (example construction projects for different analysis years) was quantified to demonstrate how impacts vary by project size as regulations become more stringent over time. Total construction emissions are taken into account, as appropriate, as part of the preparation of AQMPs.

Construction emissions are presented in the table below for four project sizes 1) low-end (LE) scenario, 2) the low-mid-range (LM) scenario, 3) the high-mid-range (HM) scenario and 4) the high-end (HE) scenario. These four potential construction scenarios were analyzed for the analysis years 2025, 2032, 2037, and 2050. The year 2025 corresponds to the NAAQS attainment year for the annual PM2.5 standard (for serious nonattainment designation). The years 2032 and 2037 correspond to attainment years for the 2008 and 2015 ozone standards (for the extreme nonattainment designation). The year 2050 is the Plan horizon year. Evaluations for the four scenarios and four analysis years was completed for 1) Los Angeles County within the SCAQMD, 2) Orange County within the SCAQMD, 3) Riverside County in the SCAQMD, 4) Northern Los Angeles County in the AVAQMD, 5) San Bernardino County in the MDAQMD, 6) Imperial County in the ICAPCD and 7) Ventura County in the VCAPCD, The construction emissions vary among the different air districts based on factors such as mobile source fleet mixes, differing allowed VOC limits in coating by air districts, regional wind speeds, etc. In addition, as noted above, different air districts have different thresholds of significance.

To simplify the presentation here the construction scenario for Los Angeles County, is presented below. The analysis of construction scenario emissions in Los Angeles County is representative of emissions in the other areas and is generally more conservative as emission thresholds are the most stringent within the SCAQMD. **Table 3.3-12**, **Construction Emissions Summary (lbs/day), Los Angeles County, SCAQMD**, presents the estimated construction emissions for each of the four construction scenarios for each of the four analysis years for projects located in Los Angeles County in the jurisdiction of the SCAQMD. As demonstrated below, even though emissions decrease over time for each scenario, there is a possibility to exceed the NOx emissions thresholds from larger projects through year 2032. By Year 2037 even the larger template projects are not exceeding thresholds. That's not to say there couldn't be projects that could still exceed thresholds, just that the example projects selected for analysis show less than significant impacts for all pollutants in year 2037 and beyond.

TABLE 3.3-12 **Construction Emissions Summary (lbs/day), Los Angeles County, SCAQMD**

	ROG	NOX	CO	SO2	PM10 TOTAL	PM2.5 TOTAL
LE Scenario						
Year 2025	24.1	23.2	24.3	0.1	5.2	2.3
Year 2032	23.7	16.4	22.2	0.1	4.9	2.0
Year 2037	23.6	13.9	20.6	0.1	4.7	1.9
Year 2050	23.5	10.1	18.6	0.1	4.6	1.7
Threshold	75	100	550	150	150	55
Exceed?	No	No	No	No	No	No
LM Scenario						
Year 2025	25.3	52.3	47.4	0.1	10.8	4.3
Year 2032	24.6	36.8	42.3	0.1	10.2	3.7
Year 2037	24.4	30.7	38.7	0.1	9.9	3.5
Year 2050	24.2	22.0	33.0	0.1	9.5	3.1
Threshold	75	100	550	150	150	55
Exceed?	No	No	No	No	No	No
HM Scenario						
Year 2025	37.6	**114.5**	87.5	0.3	32.0	12.4
Year 2032	36.6	84.9	74.7	0.3	30.9	11.5
Year 2037	36.3	71.7	64.7	0.3	30.4	11.0
Year 2050	35.8	52.1	51.3	0.3	29.6	10.2
Threshold	75	100	550	150	150	55
Exceed?	No	**Yes**	No	No	No	No

	ROG	NOX	CO	SO2	PM10 TOTAL	PM2.5 TOTAL
HE Scenario						
Year 2025	38.1	**150.0**	106.6	0.5	42.3	15.1
Year 2032	37.1	**110.3**	91.2	0.5	41.1	14.0
Year 2037	36.7	92.8	79.7	0.5	40.5	13.4
Year 2050	36.2	69.5	62.8	0.5	39.6	12.6
Threshold	75	100	550	150	150	55
Exceed?	No	**Yes**	No	No	No	No

For the four potential construction scenarios located in the six other geographic and jurisdictional areas, the construction emissions and comparisons to the corresponding air quality CEQA significance thresholds are provided in the Appendix B-1 to this PEIR. Like Los Angeles County in the SCAQMD, the construction emission scenarios for the other counties present similar trends, including a general trend of reduction in emissions over time for each scenario.

While construction of each individual project is temporary and limited in nature, emissions from individual construction projects have the potential to exceed localized and daily thresholds. As stated above, the five air districts in the SCAG region have set mass daily or annual construction and/or operational emissions thresholds. Furthermore, all the air districts in the SCAG region have relevant fugitive dust rules that apply to construction activities. While these thresholds are to be applied to individual construction projects, the air districts do not provide a threshold for use with regional planning documents such as the RTP/SCS. However, SCAQMD does account for estimated construction emissions from off-road construction equipment within the 2022 AQMP. As demonstrated in the 2022 AQMP, and discussed above, total regional emissions of criteria pollutants including from construction sources would generally decline through at least 2050. In addition, at the individual project level there is the potential for local exceedances.

The construction emissions summary tables above outline scenarios in the South Coast Air Basin and show in some cases, larger projects have the potential to exceed emissions significance thresholds for NOx before 2037. Construction emissions vary depending on project size, construction year and location. Furthermore, project-specific analyses may vary depending on use of higher tier emission controls and different phasing assumptions with respect to use of equipment. Therefore, in the absence of project-specific information, construction activities may result in emissions that could be significant.

OPERATIONAL EMISSIONS

As noted in Chapter 2, *Project Description*, as part of the process for developing Connect SoCal 2024, SCAG is responsible for ensuring that on-road mobile source emissions meet NAAQS and CAAQS for the SCAG region, as well as SB 375 GHG targets (for passenger vehicles and light-duty trucks only).

On-road mobile source emissions evaluated in Connect SoCal 2024 by SCAG include passenger vehicles, light-duty trucks, medium-duty trucks, and heavy-duty trucks. CARB identifies emissions standards for these sources. Off-road vehicles generally refer to construction equipment. In the AQMP, off-road vehicles refer to locomotives, ocean going vessels, off-highway recreational vehicles, cargo handling equipment, farm equipment, and aircraft. CARB is responsible for implementing the AQMP with respect to emissions standards for construction equipment

sold within the state. The USEPA implements the AQMP with respect to regulating emissions from interstate heavy-duty trucks, certain categories of off-road equipment, aircrafts, locomotives, and ships as these are federally regulated sources (i.e., sources that only the federal government has regulator purview over).

The air quality management and air pollution control districts are responsible other sources of air pollution in the SCAG region (such as stationary sources, construction equipment) and ensuring that standards are met. However, rail, aviation and ocean-going vessels are regulated at the federal level and air districts have no regulatory purview to address these sources and are not responsible for addressing these sources. These air quality management and air pollution control districts include SCAQMD, MDAQMD, VCAPCD, AVAQMD, and ICAPCD. The SCAQMD includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties (SCAQMD 1999). SCAQMD's 2022 AQMP's analysis of the emissions resulting from stationary sources, construction equipment, windblown dust, airplanes, trains, and ships is comprehensive and is discussed below as representative of (i.e., including most of) these emissions throughout the entire SCAG region. Other air districts do not publish such comprehensive data and therefore such data is not available for the entire region. As stated in Section 3.3.3, the SCAQMD region is home to more than 17 million people–the majority of the approximately 19 million people in the SCAG region. Thus, the use of the SCAQMD 2022 AQMP emissions data as representative of the SCAG region is a reasonable approach.

In addition to on-road mobile sources provided by SCAG, SCAQMD's 2022 AQMP provides emission estimates for stationary sources and off-road mobile sources from 2018 to 2037 (for informational purposes, these data were linearly interpolated for years 2019, 2030, 2040, and 2050), see **Table 3.3-13, SCAQMD's 2022 AQMP Forecast of Annual Average Total Emissions in SCAB through 2050 (Including Summer Planning)**. Stationary sources include both point and area sources. Point stationary sources include permitted facilities, such as power plants and refineries, with one or more emission sources. Area stationary sources include small emission sources, such as residential water heaters, architectural coatings, consumer products, and smaller permitted sources. Off-road mobile sources include construction equipment, locomotives, ocean-going vessels, aircraft, cargo handling equipment, and farm equipment (SCAQMD 2022b).[16,17] SCAQMD does not forecast out to 2050, but the general trend of most pollutants decreasing is not expected to change.

[16] For the 2022 AQMP CMAQ modeling simulations were conducted using a Lambert Conformal grid projection where the western boundary of the domain is at 084 UTM, over 100 miles west of the ports of Los Angeles and Long Beach. The eastern boundary extends beyond the Colorado River, while the northern and southern boundaries of the domain extend to the southern edge of the San Joaquin Valley and the Northern portions of Mexico (3543 UTM).

[17] 2022 AQMP Aircraft emissions at small general aviation airports were allocated by using the California Air Resources Board's Gridded Aircraft Trajectory Emissions (GATE) model. Aircraft emissions at commercial airports were first calculated using the Federal Aviation Authority's Aviation Environmental Design Tool (AEDT). AEDT resolves emissions into four vertical layers: ground level, below 1,000 feet, below mixing height, and below 10,000 feet. The mixing height corresponds to an annual average, airport-specific value assigned in AEDT.

TABLE 3.3-13 **SCAQMD's 2022 AQMP Forecast of Annual Average Total Emissions in SCAB through 2050 (Including Summer Planning)**

	TONS/DAY					
YEAR	VOC	NOX	CO	SOX	PM2.5	NH3
2018	406	351	1658	15	59	77
2019	401	331	1618	15	59	78
2023	378	249	1458	15	58	79
2025	371	225	1397	15	58	81
2030	351	205	1157	15	58	83
2031	347	201	1109	15	58	83
2032	345	199	1067	15	58	83
2037	339	184	923	15	59	85
2040	336	175	837	15	60	87
2050	327	154	635	15	61	91

Source: SCAQMD 2022a, Table 7-8

Table Note:

Data are linearly interpolated for informational purposes for years 2019, 2030, 2040, and 2050 based on available data from the 2022 AQMP.

As shown in Table 3.3-13, in the SCAB region total VOC, NOx, and CO emissions are anticipated to decrease between 2018 to 2037, and through 2050. The SOx, and PM2.5 emissions are expected to remain approximately the same, which is expected to occur due to increases in population and activity that will outpace the emissions reductions expected to occur from newer and cleaner equipment and vehicles. VOC and NOx emissions are expected to decrease due to existing regulations, such as on- and off-road equipment regulations and vehicle emissions standards (SCAQMD 2022a).

The SCAQMD's 2022 AQMP identifies the top ten source categories for VOC, NOx, SOx, and PM2.5 for the years 2018, 2023, 2025, 2031, 2032, and 2037 (for informational purposes, these data were linearly interpolated for years 2019, 2030, 2040, and 2050). Review of these data demonstrates that in 2019, passenger cars, light-duty trucks, and medium duty trucks are anticipated to be the top ten contributors of VOC emissions in the SCAG region. By 2037, VOC emissions from on-road mobile sources are anticipated to substantially decrease due to more stringent on-road standards, and only passenger cars and light-duty trucks are anticipated to be within the top ten contributors to VOC emissions. Throughout the entire AQMP planning year, heavy-duty trucks, off-road construction equipment, ships, and commercial boats will be the top contributors of NOx emissions, although the emission rates will decline over the years. Regarding SOx emissions, ships and commercial boats and aircrafts are the highest contributors in the SCAB region and are anticipated to fluctuate over the AQMP planning years. Finally, heavy-duty diesel trucks, light-duty trucks, and passenger cars are the only mobile sources in the top ton polluters for PM2.5 emissions in the SCAB region. From 2018 to 2037, passenger car PM2.5 emissions are expected to slightly increase while paved road dust is expected to increase from 8.6 to 9.4 tons per day. Construction and demolition-related PM2.5 emissions are expected to increase while off-road equipment and heavy-duty diesel trucks fall off of the top ten emitter categories in 2037 (SCAQMD 2022a).

Other air basins in the SCAG region include the SCCAB, SSAB, and MDAB. As demonstrated in Table 3.3-6, like SCAB, all three air basins are in nonattainment for ozone and PM10. The SCCAB and portions of the SSAB are also in nonattainment for PM2.5. Each of these air basins has an AQMP or SIP to plan the basin's attainment status pursuant to the federal CAA to address nonattainment (MDAQMD 2017).

ON-ROAD MOBILE SOURCE EMISSIONS

For the purposes of this PEIR, mobile source air emissions were estimated for the years 2030, 2040, and 2050 with the Plan and compared to the existing conditions (2019). The calculated emissions were compiled for ROG, NOx, CO, PM10, PM2.5, and SOx for each county in the SCAG region. The only pollutants expected to increase with implementation of Connect SoCal 2024 are PM10 annual emissions in Imperial and Riverside Counties. Annual PM10 in the remaining counties will decrease from the existing emissions to 2030, 2040, and 2050. ROG, NOx, CO, PM2.5, and SOx emissions in every county are expected to decrease with implementation of the Plan (**Table 3.3-14**, **On-Road Mobile Source Criteria Air Pollutant Emission by County – Existing Conditions [2019] vs year 2030, 2040, and 2050 Plan**).

As shown in Table 3.3-14, the Plan will reduce emissions from existing conditions (2019) except a slight increase in PM10 emissions in 2050 in Imperial and Riverside County. In part, the reduction is due to vehicle emissions reductions required by federal and states rules and policies (see 3.3.2 Regulatory Framework). Mobile source particulate matter emissions would remain approximately the same or decrease from existing conditions in the other counties. Particulate matter is generated by tires on roadways and therefore, unlike other pollutants that can be regulated through tailpipe emission controls, particulate matter is difficult to address without simply reducing VMT.

The Plan includes transportation projects including transit projects and land use strategies aimed at reducing the VMT across the region. One result of these investments is a decline in per capita VMT compared to existing conditions (although total VMT for all vehicles would increase) (see further discussion in Section 3.17, *Transportation*). At the regional level, on-road mobile source emissions would generally decrease (with the exception of small increases in PM10 in some counties). However, it is possible that individual projects, particularly development projects that generate many vehicle trips (i.e., high VMT) would result in localized air quality impacts.

TABLE 3.3-14 **On-Road Mobile Source Criteria Air Pollutant Emissions by County – Existing Condition (2019) vs Year 2030, 2040, and 2050 Plan**

COUNTY		(TONS/DAY)								
		ROG		NOX			CO	PM10	PM2.5	SOX
		SUMMER	ANNUAL	SUMMER	ANNUAL	WINTER	WINTER	ANNUAL	ANNUAL	ANNUAL
Imperial	Existing	2	2	5	6	6	16	0.3	0.1	<0.1
	Plan (Year 2030)	1	1	2	2	2	7	0.3	0.1	<0.1
	Plan (Year 2040)	1	1	2	2	2	6	0.3	0.1	<0.1
	Plan (Year 2050)	1	1	2	2	2	6	0.3	0.1	<0.1
	Difference (Year 2030)	-1	-1	-3	-4	-4	-9	-<0.1	-<0.1	-<0.1
	Difference (Year 2040)	-1	-1	-4	-4	-4	-10	-<0.1	-<0.1	-<0.1
	Difference (Year 2050)	-2	-1	-4	-4	-4	-10	<0.1	-<0.1	-<0.1

COUNTY		(TONS/DAY)								
		ROG		NOX			CO	PM10	PM2.5	SOX
		SUMMER	ANNUAL	SUMMER	ANNUAL	WINTER	WINTER	ANNUAL	ANNUAL	ANNUAL
Los Angeles	Existing	53	52	84	93	91	497	6.9	3.0	1.0
	Plan (Year 2030)	27	27	28	31	30	241	5.8	2.1	0.8
	Plan (Year 2040)	20	20	19	21	21	177	5.6	1.9	0.6
	Plan (Year 2050)	18	18	18	20	20	162	5.7	1.9	0.6
	Difference (Year 2030)	-26	-25	-56	-63	-60	-256	-1.1	-0.9	-0.2
	Difference (Year 2040)	-32	-32	-65	-73	-70	-320	-1.3	-1.1	-0.3
	Difference (Year 2050)	-34	-33	-66	-74	-71	-335	-1.2	-1.0	-0.3
Orange	Existing	16	16	22	25	24	149	2.2	0.9	0.3
	Plan (Year 2030)	9	9	8	9	9	77	1.9	0.7	0.2
	Plan (Year 2040)	7	7	5	6	6	57	1.8	0.6	0.2
	Plan (Year 2050)	6	6	5	5	5	54	1.8	0.6	0.2
	Difference (Year 2030)	-7	-7	-14	-16	-15	-73	-0.3	-0.2	-0.1
	Difference (Year 2040)	-9	-9	-17	-19	-18	-93	-0.4	-0.3	-0.1
	Difference (Year 2050)	-10	-10	-18	-20	-19	-96	-0.4	-0.3	-0.1
Riverside	Existing	14	13	28	31	30	115	2.0	0.9	0.3
	Plan (Year 2030)	8	8	11	12	12	62	1.8	0.7	0.2
	Plan (Year 2040)	6	6	9	9	9	52	1.9	0.7	0.2
	Plan (Year 2050)	6	6	9	10	10	51	2.1	0.7	0.2
	Difference (Year 2030)	-6	-5	-17	-19	-18	-52	-0.2	-0.3	-<0.1
	Difference (Year 2040)	-7	-7	-20	-21	-21	-63	-0.1	-0.3	-0.1
	Difference (Year 2050)	-8	-7	-19	-21	-20	-63	0.1	-0.2	-<0.1
San Bernardino	Existing	16	15	32	35	34	129	2.2	1.0	0.3
	Plan (Year 2030)	9	8	12	13	13	64	1.9	0.7	0.2
	Plan (Year 2040)	6	6	9	10	10	51	2.0	0.7	0.2
	Plan (Year 2050)	6	6	9	10	10	50	2.1	0.8	0.2
	Difference (Year 2030)	-7	-7	-20	-22	-21	-65	-0.3	-0.3	-0.1
	Difference (Year 2040)	-10	-9	-23	-25	-24	-78	-0.2	-0.3	-0.1
	Difference (Year 2050)	-10	-9	-23	-25	-24	-79	-<0.1	-0.2	-0.1

COUNTY		(TONS/DAY)								
		ROG		NOX			CO	PM10	PM2.5	SOX
		SUMMER	ANNUAL	SUMMER	ANNUAL	WINTER	WINTER	ANNUAL	ANNUAL	ANNUAL
Ventura	Existing	3	3	6	7	6	25	0.5	0.2	0.1
	Plan (Year 2030)	2	2	2	2	2	12	0.4	0.1	<0.1
	Plan (Year 2040)	1	1	1	1	1	9	0.4	0.1	<0.1
	Plan (Year 2050)	1	1	1	1	1	8	0.4	0.1	<0.1
	Difference (Year 2030)	-1	-1	-4	-4	-4	-13	-0.1	-0.1	-<0.1
	Difference (Year 2040)	-2	-2	-5	-5	-5	-17	-0.1	-0.1	-<0.1
	Difference (Year 2050)	-2	-2	-5	-6	-5	-18	-0.1	-0.1	-<0.1

As shown in Section 3.17, *Transportation*, Table 3.17-15, VMT Per Capita By County (2019, 2030, 2045, and 2050), VMT per capita under the Plan would be less than existing conditions with the exception of Imperial County.

OFF-ROAD MOBILE SOURCES

According to the SCAQMD's 2022 AQMP, off-road mobile source emissions (like those from airplane, locomotives, and ships) will observe decreased VOC, NOx, CO, and PM2.5 emissions in the SCAB region between 2018 and 2037 (for informational purposes, these data were linearly interpolated for years 2019, 2030, 2040, and 2050); see **Table 3.3-15**, **2022 AQMP Forecast of Annual Average Off-Road Mobile Emissions in SCAB (Including Summer Planning)**.

TABLE 3.3-15 **2022 AQMP Forecast of Annual Average Off-Road Mobile Emissions in SCAB (Including Summer Planning)**

YEAR	TONS/DAY					
	VOC	NOX	CO	SOX	PM2.5	NH3
2018	107	143	807	4	6	0
2019	105	142	791	5	6	0
2030	74	120	609	5	5	0
2037	54	106	492	5	4	0
2040	46	101	443	6	4	0
2050	18	81	277	6	3	0

Source: *SCAQMD 2022a, Tables 3-2 and 3-4*

Table Note: Data are linearly interpolated for informational purposes for years 2019, 2030, 2040, and 2050 based on available data from the 2022 AQMP.

As shown in Table 3.3-15, emissions from off-road mobile VOC, NOx, CO, and PM2.5 emissions within the SCAB region are anticipated to decrease in future years. SOx emissions from off-road mobile are anticipated to increase and NH3 emissions will remain constant (near zero level).

STATIONARY SOURCES

The projected emissions from other pollutants from stationary sources are provided in **Table 3.3-16, AQMP Forecast of Annual Average Off-Road Mobile Emissions in SCAB**. As shown in Table 3.3-16, stationary source emissions from NOx and CO are anticipated to decrease, SOx and NH3 to remain the same and VOC and PM2.5 to increase when 2018 conditions are compared to 2037.

Total NOx emissions show a modest 4 percent decrease between 2016 AQMP projections and the 2022 AQMP inventory. Stationary source NOx emissions have decreased close to 14 percent. VOC emissions stayed about the same between the 2016 AQMP projections and the 2022 AQMP inventory, with stationary sources increasing by approximately 3 percent. However, between 2018 and 2037, NOx is expected to decrease by 21 percent and VOC is expected to increase by 14 percent (for informational purposes, these data were linearly interpolated for years 2019, 2030, 2040, and 2050).

TABLE 3.3-16 **AQMP Forecast of Annual Average Stationary Source Emissions in SCAB**

	TONS/DAY					
YEAR	VOC	NOX	CO	SOX	PM2.5	NH3
2018	218	52	104	9	42	61
2019	220	52	104	9	43	61
2030	238	46	99	9	45	61
2037	249	41	96	9	46	61
2040	254	40	95	9	47	61
2050	271	34	91	9	49	61
2018 vs. 2037	14%	-21%	-8%	0%	10%	0%
2019 vs. 2030	8%	-12%	-5%	0%	5%	0%
2019 vs. 2040	15%	-23%	-9%	0%	9%	0%
2019 vs. 2050	23%	-35%	-13%	0%	14%	0%

Source: SCAQMD 2022a, Tables 3-2 and 3-4
Table Note: Data are linearly interpolated for informational purposes for years 2019, 2030, 2040, and 2050 based on available data from the 2022 AQMP.

POTENTIAL OVERLAPPING CONSTRUCTION AND OPERATIONAL EMISSIONS

The assessment of Plan impacts in the 2024 PEIR was prepared at the programmatic level for the entire SCAG region for a development timeframe spanning over 20+ years from 2019–2050. Evaluating specific development of individual projects is not possible and would be speculative as the anticipated timing, location, scale, and duration of land use changes and new development are not known at this time. This PEIR identifies county and regional emissions for reasonably foreseeable development for the years 2025, 2032, 2037 and 2050. SCAG cannot reasonably anticipate if growth would be linear or sporadic between 2019 and 2050, nor can SCAG attempt to characterize how many individual projects may be undergoing construction at any given time. The analysis of construction emissions presented in this PEIR evaluates four template scenarios assuming these emissions are net new. Construction activities are occurring within the region under existing conditions, and there is no way to determine the incremental effect of implementing the Plan on average or maximum daily construction activity (i.e., the change in daily construction equipment hours of use or change in daily construction vehicle miles traveled).

Furthermore, each individual project developed within the region would be subject to environmental review consistent with each air district and local agency procedures and would be required to demonstrate consistency with the AQMP as appropriate. Overlapping construction and operational activities could result in a potentially significant and unavoidable impact on a programmatic level.

WILDFIRE

SCAQMD accounts for most sources of pollutants in their AQMP. However, in recent years wildfires have added substantial amounts of pollutants to the SCAB that are unaccounted for in the AQMP. However, the SCAQMD 2022 AQMP begins addressing the potential impacts in a section titled "Atypical Ozone in 2020: The COVID-19 Pandemic, Extreme Heat, and Wildfires."

Wildfire emissions are likely to result in significant air quality and health impacts in the future. According to SCAG's Public Health Draft Technical Report, wildfires are going to become more prevalent as climate change leads to drier, hotter conditions in Southern California (SCAG 2019c). The SCAQMD and MDAQMD include information regarding active wildfires, resulting air quality impacts, and the health risks of wildfires on their websites. (SCAQMD 2023f; MDAQMD 2023b). According to the USEPA's Exceptional Events Rule, exceedance of air data recorded at monitoring stations triggered by natural events or human-caused events that are unlikely to recur at a particular location and not reasonably controllable or preventable (e.g., fireworks displays, wildfires, prescribed fires, high wind dust events, etc.) can be excluded when determining NAAQS attainment (Federal Register 2016).

WINDBLOWN DUST

The SCAQMD 2022 AQMP addresses the potential for windblown dust to yield substantial amounts of pollutants, primarily particulate matter, to the SCAB that were previously unaccounted for or under-reported. Fugitive dust emissions from vehicle trips on unpaved surfaces, windblown dust settling on solar panels or on bare dirt around utility-scale solar farms (which can be resuspended during wind events), or other similar types of operational activities may occur in the SCAB. Appendix III of the SCAQMD 2022 AQMP demonstrates that paved road dust emissions of PM2.5 will increase between 2018 and 2037 and unpaved road dust will become a top ten emitter category of PM2.5 by 2037 (SCAQMD 2022c).

CUMULATIVELY CONSIDERABLE INCREASE IN EMISSIONS

The analysis of the Plan is a cumulative analysis of air quality impacts resulting from the long-term growth within the SCAG region. At the regional level, projects that are considered cumulative to and similar to the Plan are other regional-scale projects, e.g., other RTPs/SCSs for adjacent jurisdictions and AQMPs.

In 2030, 2040, and 2050, when compared to existing conditions, on-road mobile source emissions would decrease, with the exception of a slight increase to PM10 in 2050 in Imperial and Riverside Counties. Mobile source particulate matter emissions would generally remain the same or decrease from existing conditions for all other pollutants (see Table 3.3-14).

The state of California is made up of 18 MPOs. SCAG's jurisdiction makes up the majority of the Southern California region and is surrounded by three other MPO's including San Diego Association of Governments (SANDAG) to the south, Kern Council of Governments (KCOG) north of Ventura and Los Angeles Counties, and Santa Barbara

County Association of Governments (SBCAG) north of Ventura County (Institute for Local Government 2023).[18,] Each of these MPO's prepared a RTP/SCS to develop transportation and land use strategies within their region.

SANDAG's Final 2021 Regional Plan combines the Regional Transportation Plan, Sustainable Communities Strategy (SCS), and Regional Comprehensive Plan. As such, the 2021 Regional Plan must comply with specific state and federal mandates, including an SCS, per Senate Bill 375 (Steinberg 2008), that achieves greenhouse gas emission reduction targets set by CARB; compliance with federal civil rights requirements (Title VI); and environmental justice considerations, air quality conformity, and a public participation process. SANDAG's 2050 RTP/SCS EIR concluded that on-road vehicle emissions would decrease for CO, ROG, PM2.5, and NOx pollutants from 2016 to 2050, with minimal increases of 0.1 and 0.2 tons/day for SOx and PM2.5, respectively. The San Diego Air Pollution Control District maintains air plans for ozone and CO for the San Diego Air Basin (SANDAG 2021). Therefore, the growth in the San Diego region under the SANDAG's plan would not increase emissions for which the area is in non-attainment.

KCOG's 2022 RTP PEIR similarly concluded that by 2046, implementation of the RTP would reduce ROG, NOx, CO, PM2.5, and SOx emissions, however PM10 emissions would increase. The KCOG's PEIR determines that these increases in particulate matter are likely due to the increases in VMT, which would increase roadway, brake, and tire particulate matter dust. The KCOG region includes the Eastern Kern Air Pollution Control District and the San Joaquin Valley Air Pollution Control District (SJVAPCD). The SJVAPCD is in non-attainment for federal and state ozone and PM2.5 as well as state PM10 standards. The Eastern Kern Air Pollution Control District is in a moderate nonattainment area for the national, state 8-Hour, and state 1-Hour ozone standard. Growth in the KCOG region would result in decreases in ozone precursors but result in slight increases in particulate matter for which SJVAPCD is in non-attainment for (Kern Council of Governments 2018).

Finally, the SBCAG 2050 RTP/SCS's (called Connected 2040) Programmatic EIR concluded that on-road emissions would decrease within the SBCAG region by 2050, therefore resulting in a less-than-significant impact. Santa Barbara County is in non-attainment for state 8-hour ozone and state PM10 standards, therefore, SBCAG would reduce pollutants for which the area is in non-attainment (Santa Barbara County Association of Governments 2017a).

Pursuant to the USEPA's Transportation Conformity Regulations, the regional emissions tests are met if plan emissions are within the applicable emissions budgets for each nonattainment or maintenance area for all milestone, attainment, and planning horizon years and, if no emissions budgets have been established, if Plan emissions are less than the no-build emissions or the base-year emissions. The emissions budgets that were established in the AQMPs/SIPs in the SCAG region and have been approved by the USEPA function as the applicable emission budgets for the conformity analysis for the respective nonattainment and maintenance areas. Federal conformity regulations also require the regional emissions analysis to be based on the Latest Planning Assumptions that include the latest vehicle data (fleet, age, activity) and latest socioeconomic growth forecast. A conformity determination must be made for each nonattainment and maintenance area in the region. In addition to the regional emissions analysis, the Plan is also required to pass (1) the timely implementation of the TCM test, (2) the Financial Constraint test, and (3) the Interagency Consultation and Public Involvement test. The regional emissions analysis serves as a reasonable analysis of cumulative air quality impacts of the Plan. Connect SoCal 2024 meets the regional emissions tests for each nonattainment and maintenance area and for all milestone, attainment, and planning horizon years.

[18] The area north of San Bernardino County is a non-MPO, rural area.

The Plan will meet the targets and emissions reduction milestones for on-road mobile source emissions set in each of the AQMPs/SIPs within the SCAG region and are in compliance with federal conformity requirements. Additionally, implementation of the Plan will reduce on-road mobile criteria air pollutants and thus reduce the overall health effects to the surrounding community. Total emissions within the SCAB region, which makes up a large portion of the SCAG area, are expected to decrease as well through 2037 according to the 2022 AQMP with the exception of negligible change in PM2.5 and SOx. Reductions in ROG, NOx, and CO are consistent with the RTP/SCS for the SANDAG, KCOG, and SBCAG planning areas. The KCOG and SANDAG region are also anticipated to result in increases in particulate matter in the future. However, because emissions would increase in some counties, largely as a result of increased total VMT, and SOx would increase in the region at least through 2037, the SCAG region would add to emissions of neighboring MPO's. Moreover, as discussed in Impact AQ-2, individual project emissions may result in significant construction and/or operational emissions as compared to thresholds of significance identified by each air district. Therefore, the Plan could contribute to cumulative impacts from adjacent MPO's. This impact is considered significant, and mitigation is required.

SUMMARY

Total emissions in the SCAB region (as indicated in 2022 AQMP) and likely across the SCAG region are expected to generally decline through at least 2037 except for negligible changes in PM2.5 and SOx (Table 3.3-13). SCAG is responsible for assessing on-road mobile source emissions through 2050. In general, in 2030, 2040, and 2050, when compared to existing conditions, on-road Mobile source emissions would decrease (see Table 3.3-14).

While certain counties in the SCAG region may see an increase in on-road mobile source PM10 emissions (Imperial, and Riverside Counties, see Table 3.3-14), the SCAQMD, AVAQMD, ICAPCD, and MDAQMD have not established regional thresholds to determine significance. The air districts within the SCAG region have only established project-level significance thresholds (see Table 3.3-9, Table 3.3-10, and Table 3.3-11). Therefore, individual projects must compare anticipated project emissions to the thresholds for the air district within which they are located in order to determine significance on the project-level. Because mobile source emissions of particulate matter may increase (on-road mobile source PM10 emissions would increase in Imperial and Riverside Counties), largely as a result of increased total VMT, the Plan could contribute to an air quality violation. Further, there is the potential for individual projects to exceed local standards during construction and/or operation for several pollutants. Therefore, this impact is considered to be significant.

HEALTH IMPLICATIONS

In accordance with the *Sierra Club v. County of Fresno* (i.e., *Friant Ranch*) decision, when air quality impacts are found to be significant, the health implications of the significant emissions should be disclosed. Modeling and analyzing health consequences requires a substantial amount of data. A detailed HRA of on-road mobile source emissions was undertaken for the Plan (see discussion of Impact AQ-4 below).

The main health concerns associated with PM10 and PM2.5 exposure (such as from vehicle exhaust or windblown dust events) include worsening of symptoms in sensitive patients with respiratory disease and excess seasonal declines in pulmonary function, especially in children. This can include an increase in the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances, such as lead, sulfates, and nitrates can cause lung damage directly. These substances can be absorbed into the blood stream and cause damage elsewhere in the body. These substances can transport absorbed gases, such as chlorides or ammonium, into the lungs and cause injury. Whereas PM10 tends to collect in the upper portion of the respiratory system, PM2.5 is much smaller and it can

penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility. Table 3.3-8 indicates that the applicable PM10 and PM2.5 State standards were exceeded multiple times between 2019 and 2021. The Plan's increase in PM10 and PM2.5 emissions could worsen the health concerns listed above or result in Air Quality Index values that are unhealthy for sensitive groups and other populations. On unhealthy days, persons are recommended to avoid both prolonged and heavy-exertion outdoor activities (USEPA 2014b).

Exposure to high concentrations of NO2 can irritate airways in the human respiratory system. Such exposures over short periods can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions and visits to emergency rooms. Longer exposures to elevated concentrations of NO2 may contribute to the development of asthma and potentially increase susceptibility to respiratory infections (USEPA 2023g). People with asthma, as well as children and the elderly are generally at greater risk for the health effects of NO2 (USEPA 2023g). As noted in the 2022 AQMP, studies related to outdoor exposure have found health effects associated with ambient NO2 levels include respiratory symptoms, respiratory illness, decreased lung function, pulmonary inflammation, increased emergency room visits for asthma, and cardiopulmonary mortality (SCAQMD 2022d). In addition, NO2 exposure can harm vegetation and crops and NO2 can interact with water, oxygen and other chemicals in the atmosphere to form acid rain. Acid rain harms sensitive ecosystems such as lakes and forests (USEPA 2023g). Table 3.3-8 indicates that the applicable NO2 federal and state standards were exceeded multiple times between 2019 and 2021 for the SCAB and MDAB. The Plan's increase in NO2 emissions could worsen the health concerns listed above or result in Air Quality Index values that are unhealthy for sensitive groups and other populations. On unhealthy days, persons are recommended to avoid both prolonged and heavy-exertion outdoor activities (USEPA 2014b).

As noted earlier, NOx and ROG are ozone precursors and the SCAG region is currently in nonattainment for PM2.5, PM10, and ozone under NAAQS and CAAQS. The main health concern regarding exposure to ground-level ozone is its effects on the respiratory system, particularly on lung function. Several factors influence these health impacts, including the concentration of ground-level ozone in the atmosphere, the duration of exposure, the average volume of air breathed per minute, the length of intervals between short-term exposures; and the sensitivity of the person to the exposure (The World Bank Group 1999; USEPA 2015).

The SCAQMD, in its amicus brief to the California Supreme Court in *Friant Ranch*, stated that from a scientific standpoint, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels over an entire air basin, and provided evidence from its 2012 AQMP that showed that if the daily emissions of NOx and ROG were reduced in amounts of 432 and 187 tons per day respectively, the ozone concentrations at SCAQMD's monitoring site would go down by only 9 ppb as compared to ozone readings without these ROG and NOx reductions (SCAQMD 2015b). For all these reasons, it is difficult to estimate the change in ozone concentrations that would result from the decrease in ozone precursors (ROG and NOx). Table 3.3-13 demonstrates there will be overall decreases in ROG and NOx from mobile and stationary sources in the SCAB region. Therefore, it can be assumed that the total amount of ozone would also decrease, however the exact amount cannot be accurately quantified.

Both ozone and particulate matter are known to have negative public health impacts especially for sensitive populations, like children, the elderly, and those with respiratory or cardiovascular health problems. Therefore, the potential for Connect SoCal 2024 to adversely affect public health was evaluated using cancer risk from diesel particulate matter as a proxy for respiratory health (see Appendix B-2). Similarly, the analysis acknowledges

applicable California legislation and initiatives to improve public health, particularly respiratory health in light of *Research Results on Land Use, Transportation, and Community Design* (Active Living Research. 2011):

> *Residents in walkable neighborhoods are more likely to meet physical activity guidelines. Public transit users are more likely to meet Surgeon General recommendations for physical activity. Greater health benefits can be achieved by increasing the amount (duration, frequency, or intensity) of physical activity.*

Connect SoCal 2024 promotes increased active transportation opportunities in communities and 15-minute communities, as these projects provide opportunities for physical activity such as walking and biking and where residents can access their most basic, day-to-day needs with a 15-minute walk, bike ride, or roll. These transportation investments and land use strategies are supportive of improving chronic disease rates (SCAG 2020b). Consistent with the equity analysis in Connect SoCal 2024, this PEIR considers the potential benefits and impacts on sensitive receptors including low-income and minority populations located in the vicinity of transportation facilities (e.g., the potential to increase or decrease diesel particulate emissions).

ROG and NOx emissions contribute to the development of ozone; therefore, reductions of ROG and NOx emissions would also lead to a reduction in ozone. Excess NOx emissions can also lead to increases in physician and emergency room visits as well as hospitalization and more school days missed by school-aged children living in the air basin. Implementation of Connect SoCal 2024, when compared to existing conditions, would decrease on-road mobile source ROG and NOx emissions (Table 3.3-14). Additionally, within the SCAB area NOx emissions are anticipated to decrease through at least 2031 from off-road vehicle and stationary sources (Table 3.3-15 and Table 3.3-16). This is supported by the NO2 air dispersion modeling conducted for the Plan and discussed under Impact AQ-3 (see Table 3.3-19).

Through at least 2037, ROG emissions are expected to decrease from off-road vehicle emissions (Table 3.3-15) but will increase from stationary sources (Table 3.3-16). Overall, the total ROG and NOx emissions from on-road, off-road vehicle, and stationary sources are expected to decrease in the SCAB area through at least 2037 (Table 3.3-13). SCAB was re-designated as in attainment of federal standards for CO in June 2017 and the last exceedance of state standards within the region for CO was in 2015. CO presents a significant health risk as it can interfere with oxygen transport within the body. Compared to existing conditions, mobile source CO emissions in the future with implementation of Connect SoCal 2024 would decrease between now and 2050 despite increasing traffic, as a result of stringent emissions controls (Table 3.3-14).

In recent years, SO2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO2 and limits on the sulfur content of fuels. SO2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO2 can also yellow plant leaves and erode iron and steel. Compared to existing conditions, mobile source SOx emissions would not change substantially despite increasing traffic (Table 3.3-14). Most of the counties within the SCAG region are emitting negligible amounts of on-road mobile source SOx; however, the AQMP does indicate that SOx (primarily from ship-related emissions) is not expected to increase at least through 2037 (see Table 3.3-13).[19]

[19] Los Angeles County is estimated to emit approximately 1-ton SOx annually under existing conditions and will continue to emit 1-ton annually in 2040 with implementation of the Plan.

The 2022 AQMP undertook a detailed evaluation of health effects associated with emissions in the SCAB, building from the analysis performed in the 2016 AQMP. That evaluation is contained within Appendix I of the Final 2022 AQMP (and is hereby incorporated by reference). It concludes the following:

> *A large body of scientific evidence shows that the adverse impacts of air pollution on human and animal health are clear. A considerable number of population-based and laboratory studies have established a link between air pollution and increased morbidity and, in some instances, premature mortality. Importantly, the health effects of air pollution extend beyond respiratory effects, and there is substantial evidence that air pollution (including particulate matter and ozone) exposures cause cardiovascular morbidity and mortality. Some air pollutants, such as diesel PM, lead, and several other air toxics, have been linked to increased cancer risk. Health studies have also identified populations who may be more susceptible to the adverse effects of air pollution, such as children, older adults, low SES communities, people with certain pre-existing health conditions, and people with certain genetic factors. Understanding the impacts of air pollution on these more susceptible populations can help inform policies that better protect public health, for example, in setting standards for criteria air pollutants, and in the development of methods to evaluate air toxics health risks. Continued research on the effects of specific PM constituents and ultrafine particles will be important in furthering the understanding of how these pollutants affect human health.*
>
> *As the scientific methods for the study of air pollution health effects have progressed over the past decades, adverse effects have been shown to occur at lower levels of exposure. For some pollutants, no clear thresholds for effects have been demonstrated. The new findings have, in turn, led to the revision and lowering of National Ambient Air Quality Standards (NAAQS) which, in the judgment of the Administrator of the U.S. EPA, are necessary to protect public health. Chapter 8 of the 2022 AQMP provides an overview of the extensive, multi-year, public process involved in setting federal air quality standards. Assessments of the scientific evidence from health studies is an important part of the process and has helped inform revisions to the federal air pollution standards (U.S. EPA, Process of Reviewing the National Ambient Air Quality Standards). Figures I-12 and I-13 are meant to convey some of the historical context to recent revisions to the NAAQS for ozone and for particulate matter, regarding key developments in the understanding of the health effects of these pollutants.*

The Plan evaluates potential health incidences based on the SCAG Scenario Planning Model (SPM). More information is provided in the Connect SoCal 2024 Performance Monitoring Technical Report; however, in all of the parameters identified, the Plan moves in positive directions for health incidences.

MITIGATION MEASURES

SCAG MITIGATION MEASURES

See **SMM GHG-1**, **SMM GHG-2**.

SMM-AQ-1 SCAG shall continue to support and provide information on regional air quality planning and related issue areas in the region. SCAG staff shall also continue to work with the U.S. Environmental Protection Agency, California Air Resources Board, and the air districts within the SCAG region and provide updates to relevant stakeholders on regional air quality planning and related issue areas through regional collaboration forums such as SCAG's Transportation Conformity Working Group.

PROJECT-LEVEL MITIGATION MEASURES

See **PMM-AQ-1**.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

As previously discussed, the Plan's Regional Planning Policies and Implementation Strategies (see Chapter 2, *Project Description*, and Section 3.0, *Introduction to Analysis*) and compliance with existing laws and regulations would reduce impacts, but given the regional scale of the analysis in this 2024 PEIR, it is not possible or feasible to determine if all impacts would be fully mitigated. Therefore, this 2024 PEIR identifies SCAG and project-level mitigation measures. At the project-level, lead agencies can and should consider the identified project-level mitigation measures during subsequent review of transportation and land use projects as appropriate and feasible. While the mitigation measures will reduce the impacts related to violation of air quality standards as well as cumulatively considerable increase of criteria pollutants, due to the regional nature of the analysis, unknown site conditions and project-specific details, and SCAG's lack of land use authority over individual projects, SCAG finds that the impact could be ***significant and unavoidable*** even with mitigation.

IMPACT AQ-3 **Expose sensitive receptors to substantial pollutant concentrations.**

Significant and Unavoidable Impact – Mitigation Required

CONSTRUCTION-RELATED EMISSIONS

Over the lifetime of the Plan numerous transportation projects and land use development projects would be implemented. The construction of these projects could expose sensitive receptors to substantial pollutant concentrations. The greatest potential for exposure to substantial pollutant concentrations and TAC emissions during construction of both transportation projects and anticipated development, would be DPM emissions associated with heavy-duty equipment operations and truck traffic during construction activities. According to the SCAQMD methodology, health effects from carcinogenic air toxics are described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person continuously exposed to concentrations of TACs over a 70-year lifetime will contract cancer based on the use of standard risk assessment methodology. SCAQMD, VCAPCD, MDAQMD, and AVAQMD has stated that the incremental cancer risk should not exceed an incremental increase of 10 excess cancer cases per million, and the chronic and acute non-carcinogenic risks should not exceed a calculated Hazard Index (HI) value of 1.0.

OEHHA published a guidance manual in 2015 to assist the preparation of health HRAs for carcinogenic and non-carcinogenic exposures to air toxics in accordance with the Air Toxics Hot Spots Information and Assessment Act (OEHHA 2015). The 2015 OEHHA HRA guidelines provide methodologies for assessing various types of environmental exposures to toxic contaminants, including inhalation exposures. The 2015 OEHHA HRA guidance relied upon a comprehensive review of the most up-to-date scientific literature to formulate the recommended exposure estimation methodologies. The OEHHA guidance acknowledges that children are especially susceptible to the effects of toxic air contaminant exposure, and incorporated age sensitivity factors (ASFs) and age-specific daily breathing rates (DBRs) to account for the differences in sensitivity to carcinogens during early life exposure. OEHHA recommends a default ASF of 10 for the age range between the third trimester of pregnancy through two years, and an ASF of three for ages two through 15 years.

As a conservative measure to characterize maximum potential exposures of sensitive receptors to carcinogenic risks, residential exposures are assumed to begin in the third trimester and exposures of children at schools is anticipated to begin at the lowest educational grade level. The OEHHA guidance provides recommended DBR values that are specific to the age of the receptor and the type of activity in which the receptor would be engaged during exposure, which are evaluated on a case-by-case basis.

The specific size and location of future construction activity within the SCAG region is not known, and therefore many variables related to characterizing potential exposures to air toxics during construction activities could not be determined, such as proximity to the emissions sources and duration of exposure. The Plan's Project List (see Connect SoCal 2024 Project List Technical Report) includes transportation projects through 2050; however, a construction HRA would be speculative given the lack of a construction location and construction activities. However, it is reasonable to assume that some level of construction activity would occur adjacent to sensitive receptors (e.g., residences and schools). The significant construction emissions identified above could result in adverse health effects to sensitive receptors. As such, it is likely that intense construction activities (e.g., from development projects that involve a high volume of haul trucks) would exceed the health risk significance thresholds due to equipment and truck exhaust emissions. This is considered a significant impact related to substantial pollutant concentrations during construction activities.

SCAQMD LOCALIZED SIGNIFICANCE THRESHOLDS

Among the five air districts in the SCAG region, the SCAQMD provides guidance for conducting the CEQA air quality analysis of localized emissions in their *Localized Significance Threshold Methodology* (SCAQMD 2008), which relies on on-site mass emission rate screening tables and project-specific dispersion modeling typically for sites sized one, two, and five acres. The AVAQMD, MDAQMD, VCAPCD, and ICAPCD do not have a similar CEQA guidance to that of the SCAQMD's localized significance thresholds.

The SCAQMD has established screening criteria that can be used to determine the maximum allowable daily emissions that would satisfy the localized significance thresholds (LSTs) and therefore not cause or contribute to an exceedance of the applicable ambient air quality standards without project-specific dispersion modeling. The screening criteria depend on (1) the area in which a project is located, (2) the size of a project area, and (3) the distance between a project area and the nearest sensitive receptor. The localized significance thresholds are applicable to NOx, CO, PM10, and PM2.5. The SCAQMD *Localized Significance Threshold Methodology* (SCAQMD 2008) provides screening localized significance thresholds for projects up to five acres in size located up to 500 meters of the nearest sensitive receptors. Should individual projects exceed applicable screening level thresholds in the SCAQMD *Localized Significance Threshold Methodology* (or successor guidance document), project-specific dispersion modeling may be conducted to demonstrate that no exceedance of the concentration-based thresholds (from which the screening tables are derived) would occur (SCAQMD 2008).

For the analysis of potential impacts on sensitive receptors, the four different construction scenarios discussed in Section 3.3.3, *Environmental Impacts*, under *Methodology*, above, and evaluated in Impact AQ-2 above for total emissions (low-end, low mid-range, high mid-range and high-end) were analyzed for three locations within the jurisdiction of the SCAQMD: Los Angeles County, Orange County, and Riverside County for the same years as analyzed above (2025, 2032, 2037, and 2050). To analyze LST impacts, the on-site portion of total emissions of the applicable localized pollutants are taken from the CalEEMod files used in the regional emissions analysis above (as noted above the CalEEMod results are contained in Appendix B-1 to this PEIR). To simplify the presentation here the construction scenario for Los Angeles County, is presented below. The analysis of construction scenario emissions in Los Angeles County is representative of emissions in the other areas. The localized significance

thresholds are based on locations, so a representative "worst-case" source receptor area was used for each of the three counties to determine comparative emissions thresholds. The "worst-case" source receptor area is comprised of the lowest mass emission threshold from all listed source receptor areas in Los Angeles County for each of the 1-acre, 2-acre, and 5-acre project sizes. A distance of 25 meters to the nearest sensitive receptor was conservatively assumed. The low-end scenario can be compared to the 1-acre LST, the low mid-range scenario can be compared to the 2-acre LST, and the high mid-range and high-end scenarios can be compared to the 5-acre LST (**Table 3.3-17, Representative Construction Localized Emissions Summary for Sensitive Receptor Distance within 25 Meters (lbs/day), Los Angeles County, SCAQMD**). The LST analyses for Orange County and the portions of Riverside County and San Bernardino County within the SCAQMD are similarly presented in Appendix B-1 of this PEIR.

TABLE 3.3-17 **Representative Construction Localized Emissions Summary for Sensitive Receptor Distance within 25 Meters (lbs/day), Los Angeles County, SCAQMD**

REPRESENTATIVE MODELING SCENARIO AND YEAR	CONSTRUCTION			
	NOX LST (LBS/DAY)	CO LST (LBS/DAY)	PM10 LST (LBS/DAY)	PM2.5 LST (LBS/DAY)
1 Acre/Low-End Scenario				
Year 2025	18.56	21.27	3.93	1.91
Year 2032	12.80	19.92	3.59	1.60
Year 2037	10.80	18.75	3.46	1.48
Year 2050	7.32	17.08	3.28	1.32
Worst-Case Source Receptor Area Threshold (Los Angeles County, SCAQMD)	46	231	4	3
2 Acre/Low Mid-Range Scenario				
Year 2025	38.85	40.57	**7.52**	3.32
Year 2032	26.30	37.06	**6.89**	2.75
Year 2037	21.46	34.19	**6.60**	2.47
Year 2050	13.74	29.42	**6.22**	2.13
Worst-Case Source Receptor Area Threshold (Los Angeles County, SCAQMD	65	346	6	4
5 Acre/High Mid-Range and High-End Scenarios				
Year 2025	83.51	78.41	**27.06**	**10.46**
Year 2032	57.92	68.38	**25.87**	**9.37**
Year 2037	46.74	60.18	**25.23**	**8.78**
Year 2050	28.18	47.26	**24.33**	**7.95**
Worst-Case Source Receptor Area Threshold (Los Angeles County, SCAQMD)	98	630	11	6

Source: SCAQMD 2009

Table Note: Bold values indicate exceedance of the worst-case source receptor area threshold.

It should be noted that all construction emissions were assumed to occur onsite for the purpose of this analysis. However, the worst-case emissions and LSTs demonstrate that the construction of individual projects within the Plan area have the potential to result in significant impacts, particularly for localized emissions of PM10 and PM2.5. While the construction scenario modeling indicates no exceedance of the localized NOx LSTs, projects with intense construction activities and/or large scale projects located in highly-urbanized regions; however, project-level analyses may be necessary for larger projects on a case-by-case basis for NOx emissions. Similarly, while it is unlikely that construction of individual projects within the Plan area would result in significant impacts for localized emissions of CO; however, project-level analyses may be necessary for larger projects on a case-by-case basis for CO emissions.

OPERATIONAL-RELATED ON-ROAD MOBILE SOURCE EMISSIONS

On-road mobile source emissions have the potential to expose sensitive receptors to substantial pollutant concentrations, including DPM and NO2.

OPERATIONAL LOCALIZED SIGNIFICANCE THRESHOLDS

Operational LSTs were not analyzed for this Plan because emissions from operational sources were analyzed on a region-wide basis and not on a localized basis. Potential future land-use projects resulting from the Plan are unlikely to have large quantities of onsite emissions to result in a significant localized impact. Nonetheless, should individual projects within the SCAQMD's jurisdiction exceed applicable screening level thresholds in the SCAQMD *Localized Significance Threshold Methodology* (or successor guidance document), project-specific dispersion modeling may be conducted during the project's environmental review process to demonstrate if an exceedance of the concentration-based thresholds (from which the screening tables are derived) would occur (SCAQMD 2008). The AVAQMD, MDAQMD, VCAPCD, and ICAPCD do not have a similar CEQA guidance to that of the SCAQMD's localized significance thresholds.

The potential impacts from NOx emissions from the Plan as it pertains to operational LSTs are analyzed in the NO2 air dispersion modeling, discussed below, and compared to the NAAQS for significance determinations. The potential impacts from diesel particulate matter are analyzed in the cancer risk analysis, below. As previously demonstrated, trends in operational emissions are meeting the objectives of the Plan.

CANCER RISK

Mobile source (heavy-duty truck) diesel emissions, specifically DPM, are the primary source of health risk concern in most urban areas. Mobile DPM emissions in the SCAG region are anticipated to decrease as compared to existing conditions. Additionally, from 2018 to 2037, passenger and light-duty truck PM2.5 emissions are expected to remain relatively constant, while heavy-duty truck PM2.5 emissions continuously decrease (SCAQMD 2022a). As a result, existing sensitive receptors would be exposed to lower concentrations of TACs in the future. Sensitive receptors include residences, schools, medical facilities, senior centers, nursing homes, and similar uses. CARB recommends that local governments avoid locating new sensitive land uses within 500 feet of freeways as discussed in the Regulatory Framework above (see Section 3.3.1, *Definitions*).

Consistent with CARB recommendations, it is anticipated that local governments would consider potential health risk concerns when new growth is located within 500 feet of freeways and/or address those concerns through appropriate design requirements, health risk reduction strategies, or comparable mitigation measures. For example, in the City of Los Angeles, all new mechanically ventilated buildings located within 1,000 feet of freeways

are required to install air filtration media that provides a MERV of 13.[20] In addition, properties within 1,000 feet of freeways within the City of Los Angeles are subject to an advisory notice regarding adverse health impacts resulting from chronic exposure to vehicle exhaust and particulate matter. The notice indicates that all applicants filing for a discretionary action within 1,000 feet of a freeway must adhere to design guidelines regarding freeway proximity, including (a) avoiding locating sensitive uses such as schools, day-care facilities and senior centers; (b) locate occupied open space away from freeway sources; (c) prioritize non-habitable spaces (e.g., parking) nearest the freeway; and (d) screen the site with substantial vegetation and or wall/barrier (City of Los Angeles Department of City Planning 2018). The City of Los Angeles also has numerous general plan policies related to air emissions and health and has announced the City of Los Angeles Green New Deal, which includes goals that would reduce on-road mobile source emissions (see Section 3.6, *Energy*). In addition, SCAQMD reviews and may provide comments recommending health risk reduction strategies on CEQA documents for projects that are located within 500 feet of freeways (SCAQMD 2023h).

Nonetheless, new sensitive receptors could be developed within 500 feet of freeways and lanes may be added to freeways that result in widenings that bring freeway lanes in closer proximity to existing sensitive receptors. To assess the public health risks associated with emissions from major roadways, an HRA was prepared for Connect SoCal 2024 and is included in Appendix B-2. An HRA evaluating the cancer risk from the transportation emissions in the SCAG region provides estimated cancer risk to the most impacted sensitive groups from a large sector of pollutants (transportation). An evaluation of the total emissions to sensitive receptors is not feasible because detailed data regarding all other sources of emissions is not available for 2050; see the discussion of the 2022 AQMP health effects appendix in Impact AQ-2.

According to the SCAQMD's most recent MATES-V study, the SCAQMD region has a population weighted cancer risk ranging from 585 to 842 per million for both stationary and mobile sources (SCAQMD 2021). It should be noted that the MATES V study evaluated the risk focusing on measurements during 2018 and 2019, and the results of the MATES V study resulted in a 40 percent decrease in cancer risk compared to the MATES IV study that evaluated the risk from 2012 to 2013 (SCAQMD 2021). Similar to the MATES-IV study, the highest concentration of DPM was simulated to occur at the Ports of Los Angeles and Long Beach in the MATES-V study (SCAQMD 2021). According to CARB, DPM emissions account for approximately 70 percent of the known cancer risk related to air toxics in California. Major sources of diesel emissions include ships, trains, and heavy-duty trucks, especially for residents living near ports, railyards, and heavily traveled roadways (CARB 2023e).

As discussed in Section 3.3.2, *Regulatory Framework*, under *Assembly Bill 617*, above, CARB established the CAPP pursuant to AB 617, the focus of which is to reduce exposure in communities most impacted by air pollution. The types of air pollution sources being monitored are unique to each CARB-designated AB 617 community and are determined through the AB 617 program with the community and local air district to identify air quality priorities and actions to reduce air pollution in the community. Data collected from air monitoring can provide valuable information about sources of air pollution, types of pollutants, and air quality impacts in the impacted communities.

The Connect SoCal 2024 HRA evaluates potential carcinogenic health risks from emissions of DPM from motor vehicles on major freeways and transportation corridors. CARB has previously evaluated the risks posed to residential receptors near the Ports of Los Angeles and Long Beach and railyards across the SCAG region, including the four railyards in the City of Commerce, the Union Pacific Railyard in the City of Industry, Union Pacific Los Angeles Transportation Center (LATC) Railyard, and Union Pacific Mira Loma Railyard. According to CARB, port

[20] See Los Angeles Municipal Code § 99.04.504.6.

activities (including ship hoteling, cargo handling, and on-port trucking) would result in a cancer risk of over 10 in a million to approximately 1.98 million people, with the nearest receptors exceeding 500 in 1 million cancer risks (CARB 2006a). The Commerce railyards (Union Pacific Commerce Railyard, BNSF Hobart Railyard, BNSF Mechanical Sheila Railyard, and BNSF Commerce Eastern Railyard) will expose approximately 1.29 million people to a cancer risk greater than 10 in a million over a 76,000-acre area (CARB 2007a). Additionally, the City of Industry, LATC, and Mira Loma Railyards are estimated to expose approximately 91,000 residents over 8,300 acres in Industry, 147,000 residents over 9,400 acres in LA, and 7,900 people over 3,000 acres in Mira Loma, respectively, to risks equal or greater to 10 in a million (CARB 2007b, 2007c, 2008). The Connect SoCal 2024 HRA evaluates a remaining major source of DPM emissions, highly traveled roadways.

DPM emissions have been associated with acute and chronic health effects, such as the worsening of heart and lung diseases. Elevated levels of ambient particulate matter have also been identified as one of many aggravating factors for childhood asthma. At levels above the federal and state ambient air quality standards, PM10 and PM2.5 emissions are a health concern. PM2.5 is believed to have greater negative health effects because the smaller particles can penetrate to the deepest parts of the lungs. Diesel exhaust from heavy duty trucks emits a mixture of gaseous and solid air pollutants, the solid pollutants make up DPM. Approximately 90 percent of DPM emissions are less than 1 µm, thus the majority of DPM emissions are a subset of PM2.5 and are small enough to be inhaled into the lungs (CARB 2023e).

A common pollutant of public health concern in AB 617 communities is PM2.5. The efforts under AB 617 in these designated communities are intended to improve air quality, reduce emissions of PM2.5 and as a result lower potential health risk impacts. **Map 3.3-5, SCAG Region AB 617 Community PM2.5 Emissions Improvement**, graphically illustrates the progress of improvements to PM2.5 emissions (as well as PM2.5-related community-wide health risk) in the SCAG region and in AB 617 communities (identified as Priority Equity Communities). The HRA performed in this 2024 PEIR demonstrates that health risk impacts from freeway traffic along the transportation segments will improve over time. Several of the selected transportation segments for the HRA and NO2 analyses travel through the AB 617 designated communities, including the following:

- #1 IMP I-8 (Calexico, El Centro, Heber)
- #2 IMP SR-78 (North Imperial Phase 1)
- #3 LA I-110 (Wilmington, West Long Beach, Carson)
- #4 LA I-710 (South Los Angeles)

The HRA quantitatively analyzed the potential to expose people to increased cancer and other health risks, based on using the potential for increased cancer risk from diesel particulate matter from heavy-duty diesel trucks traveling on major freeways. Cancer risk is used as a proxy for general respiratory health. Only motor vehicle emissions on freeways were quantitatively evaluated because emissions from other transportation corridors are much less than emissions on major freeways. Additionally, stationary sources were not evaluated as there was insufficient data available to model the health risk posed from these sources. However, it is important to note that cancer risks from stationary sources are evaluated by the applicable air district if air permits are needed.

The HRA shows substantial reductions in DPM and associated health risks (see discussion below). In the future under Plan conditions, as a result of stringent emission controls, DPM and health risk would be reduced substantially as compared to existing conditions.

Implementation of the Plan would result in new transportation projects being developed near existing sensitive receptors or locating new receptors near transportation projects. Sensitive receptors would continue to be exposed to DPM as a result of the Plan. However, as shown in **Table 3.3-18, Summary Maximum Exposed Individual Residential 30-Year Exposure Cancer Risk**, cancer risk would decrease considerably in the future, and local jurisdictions are requiring more robust air filtration and other ways of reducing exposure to existing sources of pollutants in particular in proximity to freeways (see above example regarding the City of Los Angeles).

The declines in cancer risk over time across all freeway segments observed in Table 3.3-18 is the result of continued decreases in per-vehicle mile fleet emissions projected to occur due to continued emission control technology improvements in new vehicles.

TABLE 3.3-18 **Summary Maximum Exposed Individual Residential 30-Year Exposure Cancer Risk**

SEGMENT NO.	TRANSPORTATION SEGMENT	COUNTY/REGION	EXISTING (2019) CONDITIONS	2050 PLAN
1	IMP I-8	Imperial/El Centro	188	94.9
2	IMP SR-78	Imperial/Westmoreland	131	60.1
3	LA I-110	Los Angeles/Carson	232	118
4	LA I-710	Los Angeles/Compton	340	135
5	LA SR-60 DB	Los Angeles/Diamond Bar	447	146
6	LA SR-60 SEM	Los Angeles/South El Monte	307	86.2
7	ORA I-5	Orange/Orange	306	97.0
8	ORA I-405	Orange/Seal Beach	567	169
9	RIV I-10	Riverside/Banning	87.1	37.6
10	RIV I-15	Riverside/Temecula	98.2	38.9
11	RIV SR-91	Riverside/Corona	373	116
12	SB I-15 ONT	San Bernardino/Ontario	174	65.6
13	SB I-15 VIC	San Bernardino/Victorville	101	40.7
14	SB SR-60	San Bernardino/Ontario	490	182
15	VEN US-101 SB	Ventura/San Buenaventura	217	58.3
16	VEN US-101 TO	Ventura/Thousand Oaks	474	108

Source: Health Risk Assessment (Appendix B-2).
Table Note: Cancer Risk CEQA Significance Threshold is an increase of 10 per 1 million from the Plan.

The methodology for selection of the HRA segments is discussed above based on vehicle volumes as well as consistency with the 2016 RTP/SCS and 2020 RTP/SCS where the same 16 segments were evaluated. Eight of the sixteen segments were also previously evaluated in the 2012 RTP/SCS. This allows for the opportunity to view health risk performance of same segments over time since the adoption of the 2012 RTP/SCS (the first RTP that had the required SCS component). Emissions of DPM from each segment were calculated using VMT data generated by SCAG peer reviewed, activity-based Transportation Demand Model for 2019 and projections for 2050. The potential cancer risk for residences was evaluated for a 30-year exposure, assuming continuous exposure over those time periods (i.e., 24 hours a day, 7 days a week). SCAG VMT data were provided for heavy-duty vehicles

and light/medium-duty vehicles. The most current version of CARB mobile source emissions model (EMFAC2021) was used to obtain emissions factors of PM10 in diesel-fueled vehicles, which were assumed equal to DPM emission factors.[21]

The potential health risk of emissions from a representative 1-mile-long portion of each freeway segment were evaluated with CARB-approved AERMOD dispersion model (Version 22112) and meteorological data obtained from South Coast, Mojave Desert, Imperial, and Ventura Air District monitoring sites. The calculated DPM concentration was then used to calculate the potential carcinogenic risk using the most current OEHHA 2015 guidelines and HARP2 software.

To analyze potential cancer risk with respect to DPM, the threshold of 10 in 1 million identified above is considered. A 30-year exposure cancer risk was used in the analysis below per 2015 OEHHA guidance. According to OEHHA, the 30-year exposure duration should be used to determine the risk characterization (Office of Health Hazard Assessment 2015). The cancer risk estimates are provided in Appendix B-2.

As shown on Table 3.3-18 (also see Appendix B-2), the maximum 30-year exposure to residential cancer risk for each transportation segment is significantly reduced when compared to existing conditions. While the total all vehicle daily VMT would rise in Imperial, Riverside, and San Bernardino Counties between 2019 and 2050 under the Plan (even though per capita VMT is expected to decrease in all counties except in Imperial County—see Table 3.17-15, *VMT per Capita by County 2019, 2030, 2045, and 2050*), the maximum potential cancer risk would be reduced by approximately 50-75 percent when compared to the existing conditions. This is due to the dramatic reductions in emissions that are expected to result from federal and state regulations that require reduced tail pipe emissions from on-road HDDT. It is important to note that despite the reduction in cancer risk compared to existing conditions, the Plan would still result in exposing sensitive receptors to substantial pollutant concentrations, however such emissions would be substantially less compared to existing conditions.

As shown on Table 3.3-18 emissions under the Plan, on all segments, would decrease substantially. Due to the significant reduction in DPM emissions and associated health risk, overall risk is reduced and therefore, impacts from cancer risks are considered less than significant. Additionally, the total health risk (1,553 in 1 million) under the Plan would be less than under existing conditions (4,532 in 1 million).

NITROGEN DIOXIDE

The NO2 concentrations at near-freeway sensitive receptors was also estimated for all the same 16 freeway segments and scenarios as the HRA (existing conditions and 2050 under Connect SoCal 2024), but also includes year 2030 and 2040, in order to assess potential health impacts from emissions of NO2 from motor vehicles on major freeways and transportation corridors.

As noted in the SCAQMD's 2022 AQMP, studies related to outdoor exposure have found health effects associated with ambient NO2 levels include respiratory symptoms, respiratory illness, decreased lung function, pulmonary inflammation, increased emergency room visits for asthma, and cardiopulmonary mortality (SCAQMD 2022d). Short-term respiratory effects related to NO2 exposure include increased airway responsiveness and asthma attacks for those with asthma when exposed to 100 ppb NO2 for 60 minutes and to 200 to 300 ppb for 30 minutes (SCAQMD 2022d). For those without asthma, exposure to 500 ppm of NO2 for more than an hour can cause

[21] It should be noted the emission factors for particulate matter exhaust at speeds of 65 mph are higher in EMFAC2021 (used in this study) than in EMFAC2014 (used in 2020 PEIR), particularly for on-road heavy-duty vehicles. The EMFAC2021 emission factors were used to calculate emissions for the purpose of the HRA, NO2, and N2 deposition analyses in this PEIR.

narrowing of airways with consequent wheezing and shortness of breath (OEHHA 1999). According to the CDC, exposure to 10,000 to 20,000 ppb of NO2 for any period can cause respiratory system irritation (National Institute for Occupational Safety and Health 1994). More severe health issues occur at higher concentrations of NO2 where exposures of 210,000 to 352,000 ppb for about 3 minutes or more can lead to immediate dry cough and tightness of the chest and continued respiratory discomfort for hours after exposure (OEHHA 1999). Sustained NO exposure for long periods could be fatal as exposure above 100,000 ppb for a few hours would cause could cause death from pulmonary edema, further it is estimated that 50% lethality would occur following exposure to more than 174,000 ppb for an hour or more (NIOSH 1994; OEHHA 1999). In addition, NO2 can injure vegetation, including trees, forests, and crops where damaging vegetation has been shown at NO2 exposure levels of 100 or more hours of at least 200 ppb for 100 hours or longer during the growing season (CARB 2023r).

The analysis of NO2 concentrations at near-freeway sensitive receptors analyzed the potential to expose people to increased NO2 and associated health risks from vehicle emissions traveling on major freeways. Similar to the HRA, only motor vehicle emissions on freeways were quantitatively evaluated because emissions from other transportation corridors are much less than emissions on major freeways. In addition, as with the HRA, stationary sources were not evaluated as there was insufficient data available to model the health risk posed from these sources.

As previously discussed, implementation of the Plan would result in new transportation projects being developed near existing sensitive receptors or locating new receptors near such projects, resulting in exposure of sensitive receptors to NO2 emissions. The same 16 transportation segments were analyzed for a quantitative analysis of the NO2 concentrations at near-freeway sensitive receptors. Maximum background 1-Hour and annual NO2 concentrations were gathered for each County from CARB's "Top 4 Summary" data (CARB. 2023h). Modeled concentrations from freeway traffic contributions were added to the corresponding county background NOx concentrations.

As shown in **Table 3.3-19, Maximum 1-Hour NO_2 Concentrations at Near-Freeway Sensitive Receptors**, maximum hourly NO_2 concentrations exceed the NAAQS 1-hour NO_2 100 ppb standard under existing conditions, which as discussed above, could result in short-term respiratory effects related to NO_2 exposure such as increased airway responsiveness and asthma attacks for those with asthma. However, the modeling analysis shows that the NO_2 concentrations under the Plan would decrease substantially in the future and would not exceed the NAAQS 1-hour NO_2 100 ppb standard, thus would lessen potential health effects associated with exposure to NO_2. The Plan would improve and be protective of human health and public welfare as established by the Primary and Secondary NO2 NAAQS.

As shown in **Table 3.3-20, Maximum Annual NO2 Concentrations at Near-Freeway Sensitive Receptors**, maximum annual NO2 concentrations under existing conditions and future (2050) conditions under the Plan are not expected to exceed the NAAQS annual NO2 53 ppb standard. In addition, the modeling analysis shows that the annual NO2 concentrations would decrease substantially in the future under the Plan, thus lessening potential health effects associated with exposure to NO2. The Plan would be protective of human health and public welfare as established by the Primary and Secondary NO2 NAAQS.

In Appendix I, *Health Effects*, of the SCAQMD's 2022 AQMP, SCAQMD discussed a 2016 health study by the USEPA. The study found that when adults with asthma were exposed to NO_2 at the 100 ppb to 300 ppb concentrations, they experienced an increase in airway responsiveness, which in asthmatics could worsen symptoms and reduce lung function (SCAQMD 2022d). Based on the air dispersion modeling performed for the Plan and the modeling

results shown in Table 3.3-19 and Table 3.3-20 above, none of the 16 freeway segments would result in NO_2 concentrations of greater than 100 ppb during operation.

TABLE 3.3-19 **Maximum 1-Hour NO_2 Concentrations (ppb) at Near-Freeway Sensitive Receptors**

SEGMENT NO.	TRANSPORTATION SEGMENT	COUNTY/REGION	EXISTING (2019) CONDITIONS	2050 PLAN
1	IMP I-8	Imperial/El Centro	75.6	63.9
2	IMP SR-78	Imperial/Westmoreland	77.8	61.5
3	LA I-110	Los Angeles/Carson	106.2	88.3
4	LA I-710	Los Angeles/Compton	118.2	89.6
5	LA SR-60 DB	Los Angeles/Diamond Bar	141.3	93.8
6	LA SR-60 SEM	Los Angeles/South El Monte	113.6	86.3
7	ORA I-5	Orange/Orange	83.4	60.7
8	ORA I-405	Orange/Seal Beach	117.0	68.6
9	RIV I-10	Riverside/Banning	69.7	58.5
10	RIV I-15	Riverside/Temecula	82.6	61.9
11	RIV SR-91	Riverside/Corona	116.0	69.7
12	SB I-15 ONT	San Bernardino/Ontario	101.3	81.2
13	SB I-15 VIC	San Bernardino/Victorville	97.5	80.6
14	SB SR-60	San Bernardino/Ontario	135.3	87.8
15	VEN US-101 SB	Ventura/San Buenaventura	60.1	39.3
16	VEN US-101 TO	Ventura/Thousand Oaks	59.7	39.2
		NAAQS (ppb):	100	100
		Does any segment exceed?	**YES**	No

Source: Health Risk Assessment (Appendix B-2).

Table Note: The NAAQS for the 1-hour NO2 standard is 100 ppb. The results presented are in units of ppb and compared to the NAAQS for significance determination.

TABLE 3.3-20 **Maximum Annual NO2 Concentrations (ppb) at Near-Freeway Sensitive Receptors**

SEGMENT NO.	TRANSPORTATION SEGMENT	COUNTY/REGION	EXISTING CONDITIONS	2050 PLAN
1	IMP I-8	Imperial/El Centro	16.9	13.1
2	IMP SR-78	Imperial/Westmoreland	14.7	11.3
3	LA I-110	Los Angeles/Carson	34.3	26.9
4	LA I-710	Los Angeles/Compton	39.0	27.4
5	LA SR-60 DB	Los Angeles/Diamond Bar	43.9	27.8
6	LA SR-60 SEM	Los Angeles/South El Monte	38.4	26.3
7	ORA I-5	Orange/Orange	32.4	21.9
8	ORA I-405	Orange/Seal Beach	42.5	23.8
9	RIV I-10	Riverside/Banning	18.1	15.6
10	RIV I-15	Riverside/Temecula	28.3	18.5
11	RIV SR-91	Riverside/Corona	32.3	18.6
12	SB I-15 ONT	San Bernardino/Ontario	37.0	31.3
13	SB I-15 VIC	San Bernardino/Victorville	33.7	30.5
14	SB SR-60	San Bernardino/Ontario	49.6	33.5
15	VEN US-101 SB	Ventura/San Buenaventura	15.6	8.6
16	VEN US-101 TO	Ventura/Thousand Oaks	14.5	8.4
		NAAQS (ppb):	53	53
		Does any segment exceed?	No	No

Source: Health Risk Assessment (Appendix B-2).

Table Note: The NAAQS for the annual NO2 standard is 53 ppb. The results presented are in units of ppb and compared to the NAAQS for significance determination.

NITROGEN DEPOSITION

As previously discussed, nitrogen deposition occurs as a result of the combustion of fossil fuels and corresponding emissions of nitrogen-based pollutants. Increases in nitrogen deposition can lead to soil and water acidification, plant nutrient imbalances, declines in plant health, changes in species composition, increases in invasive species and increased susceptibility to secondary stresses. Total nitrogen deposition includes wet and dry oxidized and reduced nitrogen. Wet deposition is when rain, snow, or fog carries gases and particles to the earth's surface. Dry deposition is when gases and particles are carried to the surface in the absence of rain, snow, or fog.

There is no technical guidance on how to conduct nitrogen deposition analysis for CEQA purposes from air districts within the SCAG region. For the purposes of this PEIR, SCAG assumed that the primary driver of nitrogen deposition is from the emissions of NOx and ammonia (NH_3), primarily from gasoline vehicle operations. These emissions were calculated from EMFAC2021 emission factors and VMT from individual segments included in this analysis. Nitrogen deposition is quantified on an annual basis for the same 16 segments by using the wet and dry deposition algorithms in the AERMOD dispersion model. Nitrogen deposition was quantified for Existing (2019) and 2050 Plan. As there is no national or state standard for comparison, nitrogen deposition results in **Table 3.3-21, Maximum Annual**

Nitrogen Deposition at Near-Freeway Sensitive Receptors, are primarily to inform the discussion of health effects and potential impacts on biological resources. See section Methodology, above, for additional details).

TABLE 3.3-21 **Maximum Annual Nitrogen Deposition at Near-Freeway Sensitive Receptors**

SEGMENT NO.	TRANSPORTATION SEGMENT	COUNTY/REGION	EXISTING (2019) CONDITIONS	2050 PLAN
1	IMP I-8	Imperial/El Centro	0.338	0.150
2	IMP SR-78	Imperial/Westmoreland	0.239	0.104
3	LA I-110	Los Angeles/Carson	0.769	0.305
4	LA I-710	Los Angeles/Compton	1.107	0.346
5	LA SR-60 DB	Los Angeles/Diamond Bar	1.612	0.434
6	LA SR-60 SEM	Los Angeles/South El Monte	1.045	0.258
7	ORA I-5	Orange/Orange	0.875	0.269
8	ORA I-405	Orange/Seal Beach	1.693	0.476
9	RIV I-10	Riverside/Banning	0.215	0.090
10	RIV I-15	Riverside/Temecula	0.950	0.373
11	RIV SR-91	Riverside/Corona	1.525	0.475
12	SB I-15 ONT	San Bernardino/Ontario	0.446	0.146
13	SB I-15 VIC	San Bernardino/Victorville	0.222	0.076
14	SB SR-60	San Bernardino/Ontario	1.193	0.371
15	VEN US-101 SB	Ventura/San Buenaventura	0.934	0.228
16	VEN US-101 TO	Ventura/Thousand Oaks	0.709	0.173

Table Note: Units are in grams per meter-squared per year.

As shown in Table 3.3-21, the deposited amounts of nitrogen would be significantly reduced when compared to existing conditions. While the total all vehicle daily VMT would rise in every county under the Plan (even though per capita VMT is expected to decrease—see Table 3.17-15, *VMT per Capita by County 2019, 2030, 2045, and 2050*,), the deposition of nitrogen would be on average approximately 55 to 75 percent less than existing conditions for year 2050.

The nitrogen deposition results provided above are for informational purposes only. It is apparent from the modeling isopleths provided in Appendix B-2 that amounts of nitrogen deposition decreases substantially with increasing distances from the roadways and sources of nitrogen emissions.

PUBLIC HEALTH

In addition to mobile source emissions, multiple social, economic, and lifestyle factors could contribute to the detriment of the region's public health. Built upon the public health emphasis of previous Plans, Connect SoCal 2024 emphasizes public health.

As indicated in the Connect SoCal 2024 Equity Analysis and Performance Monitoring Technical Reports, poor air quality can also impact non-cancer related health problems including asthma. Additionally, climate change can

lead to increased wildfires and smoke, which in turn degrades the air quality in the region. Increases in PM2.5 from wildfires leads to increased hospital visits and mortality (SCAG 2023e, 2023f). This risk persists even after a wildfire is extinguished because particulate matter from fire ash can be picked up by winds.

The USEPA has promulgated the *Secondary National Ambient Air Quality Standards (NAAQS) for Nitrogen Dioxide (NOx) and Sulfur Dioxide (SO2)* to focus on public welfare from the effects of criteria pollutant emissions on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, and climate, damage to and deterioration of property. In its final rule, the USEPA retained the NO2 secondary standard, which addresses the direct effects on vegetation of exposure to gaseous oxides of nitrogen and sulfur and did not add new NO2 secondary standards and did not add new standards to address the effects of nitrogen deposition; however, it acknowledges the contribution of NOx and NHx (including ammonia) to nitrogen deposition (Federal Register 2012). The secondary NAAQS for annual NO2 is the same as the primary NAAQS (a 1-hour secondary NAAQS was not promulgated), which is analyzed through air dispersion modeling discussed above. The analysis above indicates that the Plan would not have significant secondary impacts. As discussed above, nitrogen deposition modeling was also performed and shows substantial reductions in nitrogen deposition in the future (2050) as compared to existing conditions.

SCAG has evaluated social detriments including the community context, availability of health care, neighborhood and surrounding built environment, education, and economic health to see how these factors shape public health. With nearly half of U.S. adults living with a chronic disease, SCAG recognizes improving public health is vital to the community. The Surgeon General promotes increasing physical activity as one strategy to improve public health (U.S. Department of Health and Human Services 2015).

SCAG's statutory responsibility as it relates to air quality is on-road mobile source emissions. Air districts, such as the SCAQMD, are responsible for air quality planning in the region for stationary sources. While air districts have regulatory authority in reducing stationary source pollution by developing and enforcing local rules and regulations within their jurisdictions as well as have subject matter expertise in air quality technical and modeling analysis, air districts must work closely with MPOs, such as SCAG, in order to ensure reductions in mobile source air emissions. For example, SCAQMD's most recent MATES-V study includes a discussion of the health risk in the SCAB region as a result of both stationary and mobile source emissions, including on-road mobile source information obtained from SCAG. As indicated above, the weighted cancer risk from all sources from 2018-2019 ranges from approximately 585 to 842 in 1 million, which is likely to continue to decrease over time. The MATES V study goes onto say that the areas of highest risk include those near the ports, Central Los Angeles, and along transportation corridors (SCAQMD 2021).

While implementation of the Plan would increase total VMT from 2019 to 2050 (see Chapter 4, *Alternatives*, Table 4.17-17, VMT 2019 and 2050 By County), there is a growing support for increasing active transportation investments throughout the communities in the region. These changes can only be met if there is also a change in the built environment that enable people to walk or bike safely in their communities. Proposed land use strategies and transportation investments, such as provision of additional investments in active transportation networks including first mile/last mile improvements, Safe Routes to School projects, and regional bikeways infrastructure are expected to increase the number of short trips, reduce per capita VMT and improve physical activity outcomes. The statewide Affordable Housing and Sustainable Communities (AHSC) program, as noted in the Plan, would improve air quality and reduce greenhouse gas emissions by funding housing and transportation improvements that support infill and compact development thereby reducing VMT (SCAG 2019a).

Connect SoCal 2024 includes regional strategies that would contribute to improving public health by reducing VMT (as well as encouraging increased healthy activities). As discussed in Chapter 2, *Project Description*, these strategies include increased transportation investments in active transportation opportunities and facilities, transit and passenger rail use, and land use strategies that create more opportunities for walking and biking or other physics activities. The Plan projects total all vehicle VMT would only slightly increase from 2019 to 2050, but VMT per capita would decrease.

SUMMARY

Connect SoCal 2024 would provide strategies to improve public health and develop walkable and transit friendly communities. The cancer risk adjacent to freeways would be significantly reduced when compared to existing conditions. The Plan would not exacerbate the health risk compared to existing conditions and therefore the impact of on-road emissions is less than significant.

As discussed above, construction activity would occur adjacent to sensitive receptors. The significant construction emissions identified in Impact AQ-2, could result in adverse health effects to sensitive receptors. As such, it is likely that extended intense construction activities (e.g., from development projects that involve a high volume of haul trucks) would have the potential to exceed the health risk significance thresholds due to offroad equipment and truck diesel particulate matter exhaust emissions. Therefore, the Project could result in exposing sensitive receptors to substantial pollutant concentrations during construction activities, and mitigation measures are required.

MITIGATION MEASURES

SCAG MITIGATION MEASURES

See **SMM-LU-1** through **SMM-LU-3**, **SMM-POP-1**, and **SMM-POP-2**.

PROJECT-LEVEL MITIGATION MEASURES

See **PMM-AQ-1**.

PMM-AQ-2 Projects subject to California Environmental Quality Act (CEQA) review (i.e., non-exempt projects) and located within the jurisdiction of the South Coast Air Quality Management District (SCAQMD) and within one-quarter mile (1,320 feet) of a sensitive land use shall prepare an air quality analysis that evaluates potential localized project air quality impacts in conformance with SCAQMD methodology for assessing localized significance thresholds (LST) air quality impacts. If air pollutants are determined to have the potential to exceed the SCAQMD-adopted thresholds of significance, the project shall incorporate feasible mitigation measures to reduce air pollutant emissions.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

As previously discussed, the Plan's Regional Planning Policies and Implementation Strategies (see Chapter 2, *Project Description*, and Section 3.0, *Introduction to Analysis*) and compliance with existing laws and regulations would reduce impacts, but given the regional scale of the analysis in this 2024 PEIR, it is not possible or feasible to determine if all impacts would be fully mitigated. Therefore, this 2024 PEIR identifies SCAG and project-level mitigation measures. At the project-level, lead agencies can and should consider the identified project-level mitigation measures during subsequent review of transportation and land use projects as appropriate and feasible.

While the mitigation measures will reduce the impacts related to exposure of sensitive receptors to substantial pollutant concentrations, due to the regional nature of the analysis, unknown site conditions and project-specific details, and SCAG's lack of land use authority over individual projects, SCAG finds that the impact could be ***significant and unavoidable*** even with mitigation.

IMPACT AQ-4 **Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.**

Significant and Unavoidable Impact – Mitigation Required

Odor sources within the SCAG region, such as wastewater treatment facilities, landfills, and agricultural operations, are controlled by county and city odor ordinances and air district rules that prohibit nuisance odors and identify enforcement measures to reduce odor impacts to nearby receptors. These ordinances and rules are enforced by the air pollution control districts and local law enforcements. For example, SCAQMD, MDAQMD, and AVAQMD Rule 1113; VCAPCD Rule 74.2; and ICAPCD Rules 101 and 424, Architectural Coatings, limit the amount of volatile organic compounds from architectural coatings and solvents to further reduce the potential for odiferous emissions. SCAQMD also provides rules to establish odor management practices and requirements from solid waste transfer stations and material recovery facilities in Rule 410, Odors from Transfer Stations and Material Recovery Facilities (SCAQMD 2006),and for rendering facilities in Rule 415, Odors from Rendering Facilities (SCAQMD 2017c). Additionally, SCAQMD and MDAQMD's Rule 402 (SCAQMD 1976; MDAQMD 1977); VCAPCD's Rule 51 (VCAPCD 2004); and IPAPCD's Rule 407, Nuisance (ICAPCD 1999), establishes that no person shall discharge any source of air contaminants that may cause harm or nuisance to the public. In order to hold any facility accountable for nuisance rules, the air quality management districts allow the public to report any air quality problems within the district including odor complaints (SCAQMD 2019, 2023g). As such, the Plan would be required to adhere to these rules, coupled with local air districts' enforcement on regulatory compliance with these rules and a mechanism for the public to report a complaint about odor, implementation of the Plan would not be expected to result in substantial odor emissions or affect a substantial number of people when compared to existing conditions.

CONSTRUCTION

Construction of transportation projects and land use development encouraged under the Plan have the potential to cause an increase in construction activities in the region. Activities associated with the operation of construction equipment, diesel, the application of asphalt, the application of architectural coatings and other interior and exterior finished, and roofing may produce discernible odors typical of most construction sites. As stated above, SCAQMD, MDAQMD, and AVAQMD Rule 1113; VCAPCD Rule 74.2; and ICAPCD Rules 101 and 424, *Architectural Coatings*, limit the amount of volatile organic compounds from architectural coatings and solvents to further reduce the potential for odiferous emissions. Although these odors could be a source of nuisance to adjacent uses, odors from construction at any individual site are temporary, short-term, and intermittent in nature. Construction-related emissions also decrease with distance from individual project sites and quickly dissipate.

In accordance with federal and state regulations, diesel emissions from heavy-duty trucks are projected to decrease with the Plan (see the HRA in Appendix B-2), and construction activities associated with the Plan would adhere to CARB's guidelines regarding proximity to sensitive receptors.

LAND USE DEVELOPMENT PROJECTS

The development projects anticipated to occur under the Plan would have the potential to result in nuisance odors. There are certain industries and activities that tend to result in odor complaints during operation. According to the SCAQMD CEQA Air Quality Handbook, land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. Any and all of these uses/activities could occur somewhere in the SCAG region under the Plan.

However, development projects would be required to comply with applicable odor regulations, such as SCAQMD, MDAQMD, and AVAQMD Rule 1113; VCAPCD Rule 74.2; and ICAPCD Rules 101 and 424, *Architectural Coatings*; and SCAQMD and MDAQMD Rule 402; VCAPCD Rule 51; and ICAPCD Rule 407, *Nuisance*. The air quality management districts use similar Nuisance rules, which state (SCAQMD 1976; MDAQMD 1977; VCAPCD 2004; ICAPCD 1999):

> *A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons to the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.*

Therefore, most development projects would be required to comply with rules prohibiting nuisance to the public, including odors. The level of exposure and number of receptors affected from potential odor can only be determined through project-level analysis once facility designs of individual projects are available. Therefore, odor impacts related to development would be analyzed at the individual project level. However, since development projects are required to comply with applicable odor regulations, land use development would not be expected to result in substantial odor emissions or affect a substantial number of people when compared to existing conditions.

TRANSPORTATION IMPROVEMENTS

Connect SoCal 2024 includes regional policies and implementation strategies with the aim of fostering air pollution reduction and sustainable development. Some transportation projects that involve roadway expansions or realignments could result in the transfer of vehicle emissions and/or could result in odor emissions sources being located closer to sensitive receptors. In addition, some projects (e.g., rail stations) could result in localized traffic congestion during operation that could incrementally add to odor concentrations. However, the SCAQMD does not indicate that transportation projects are associated with odor complaints. Similar to development projects, transportation projects would be required to comply with applicable odor regulations, such as the SCAQMD and MDAQMD's Rule 402; VCAPCD's Rule 51; and ICAPCD's Rule 407, *Nuisance*. Transportation projects would not be expected to result in substantial odor emissions or affect a substantial number of people when compared to existing conditions.

SUMMARY

As discussed above, implementation of Connect SoCal 2024 would not, under normal circumstances, be expected to result in substantial odor emissions or affect a substantial number of people when compared to existing conditions. However, given the size of and complexity air quality conditions in the region and potential for

unforeseen circumstances to occur through the 2050 Plan horizon, it is possible that construction activities and operation of transportation projects and land use projects could involve activities that generate emissions (such as those leading to odors) adversely affecting a substantial number of people. Such emissions are considered a significant impact, and mitigation measures are required.

MITIGATION MEASURES

SCAG MITIGATION MEASURES

See **SMM-AQ-1, SMM-GHG-1, AND SMM-GHG-2**.

PROJECT-LEVEL MITIGATION MEASURES

See **PMM-AQ-1**.

PMM-AQ-2 In accordance with provisions of sections 15091(a)(2) and 15126.4(a)(1)(B) of the State CEQA Guidelines, a Lead Agency for a project can and should consider mitigation measures to reduce substantial adverse effects related to other emissions (such as those leading to odors) adversely affecting a substantial number of people. Such measures may include the following or other comparable measures identified by the Lead Agency:

a) Implement an odor management plan that consistent with the requirements from the local air quality management district or air pollution control district.

b) Implement an odor control technique(s) or strategy(ies) consistent with the requirements from the local air quality management district or air pollution control district. Odor control techniques or strategies may include air filters, air scrubbers, enclosures, buzzer zones, physical barriers, housekeeping practices, or other techniques or strategies.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

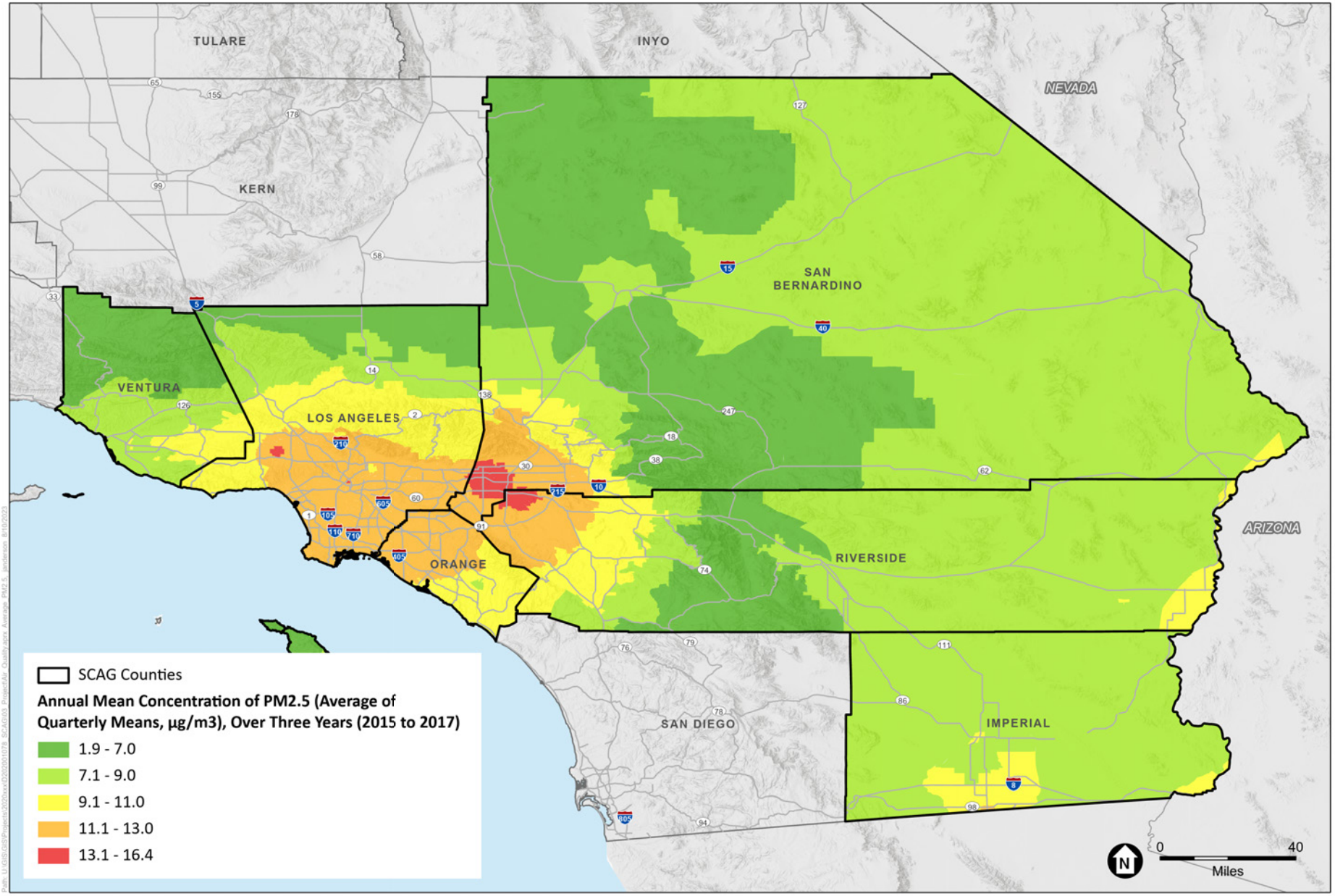
As previously discussed, the Plan's Regional Planning Policies and Implementation Strategies (see Chapter 2, *Project Description*, and Section 3.0, *Introduction to Analysis*) and compliance with existing laws and regulations would reduce impacts, but given the regional scale of the analysis in this 2024 PEIR, it is not possible or feasible to determine if all impacts would be fully mitigated. Therefore, this 2024 PEIR identifies SCAG and project-level mitigation measures. At the project-level, lead agencies can and should consider the identified project-level mitigation measures during subsequent review of transportation and land use projects as appropriate and feasible. While the mitigation measures will reduce the impacts related to other emissions adversely affecting a substantial number of people, due to the regional nature of the analysis, unknown site conditions and project-specific details, SCAG's lack of land use authority over individual projects, SCAG finds that the impact could be ***significant and unavoidable*** even with mitigation.

CUMULATIVE IMPACTS

Connect SoCal 2024 is a regional-scale Plan comprised of regional policies and strategies, a regional growth forecast and land use pattern, and individual transportation projects and investments. At this regional-scale, a cumulative or related project to the Plan is another regional-scale plan (such as AQMPs within the region) and similar regional plans for adjacent regions. Because the Plan, in and of itself, would result in significant adverse environmental impacts with respect to air quality with the exception of Plan's consistency applicable air quality

plan in Impact AQ-1,[22] these impacts would add to the environmental impacts of other cumulative or related projects. Mitigation measures that reduce the Plan's impacts would similarly reduce the Plan's contribution to cumulative impacts.

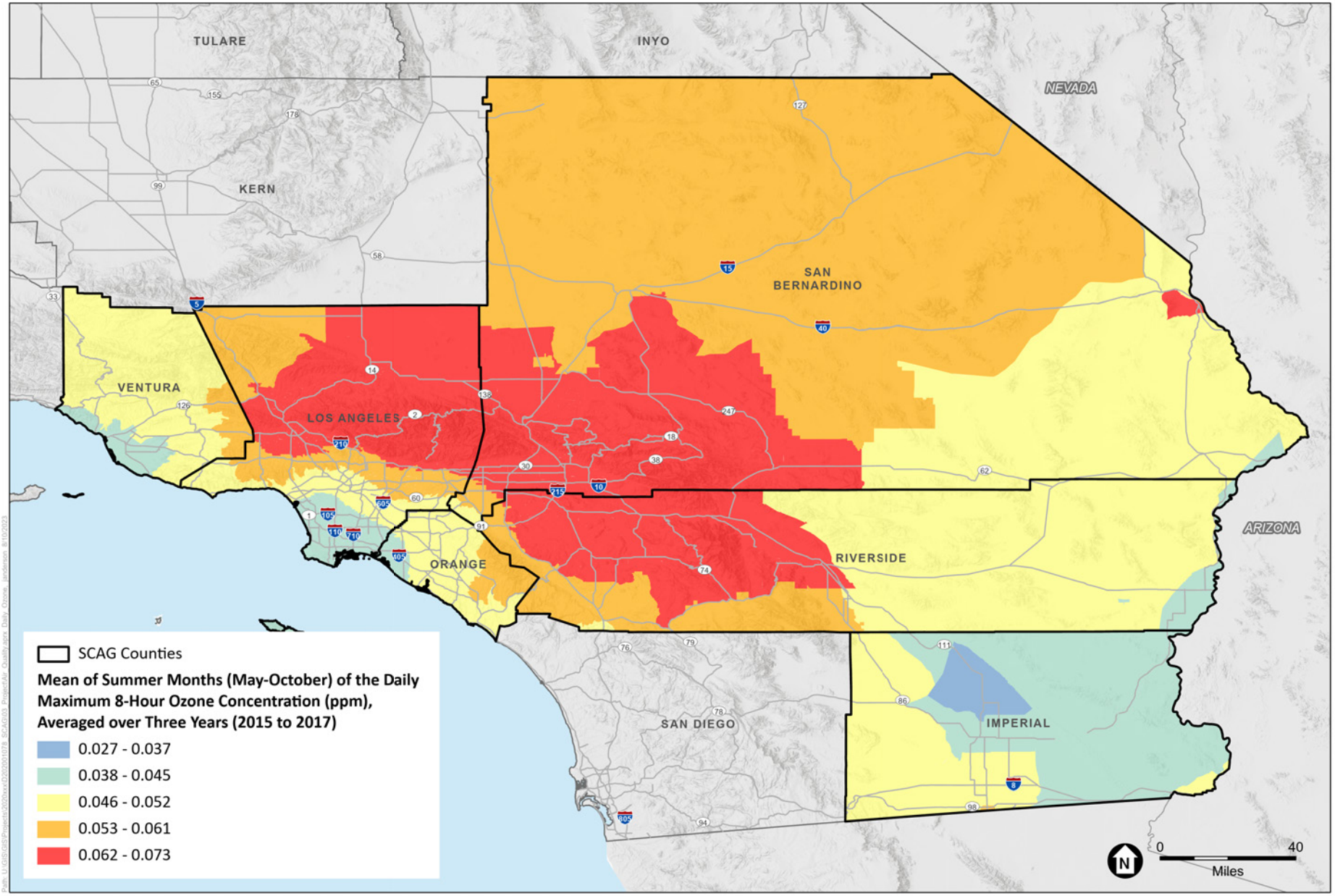
[22] The Plan demonstrates a positive transportation conformity determination. Federal approval of the final transportation conformity determination is anticipated in June 2024. This demonstrates that the Plan's contribution to conflict with the applicable air quality plan would not be cumulatively considerable.



SOURCE: CalEnviroScreen 4.0, 2021

Connect SoCal 2024 PEIR

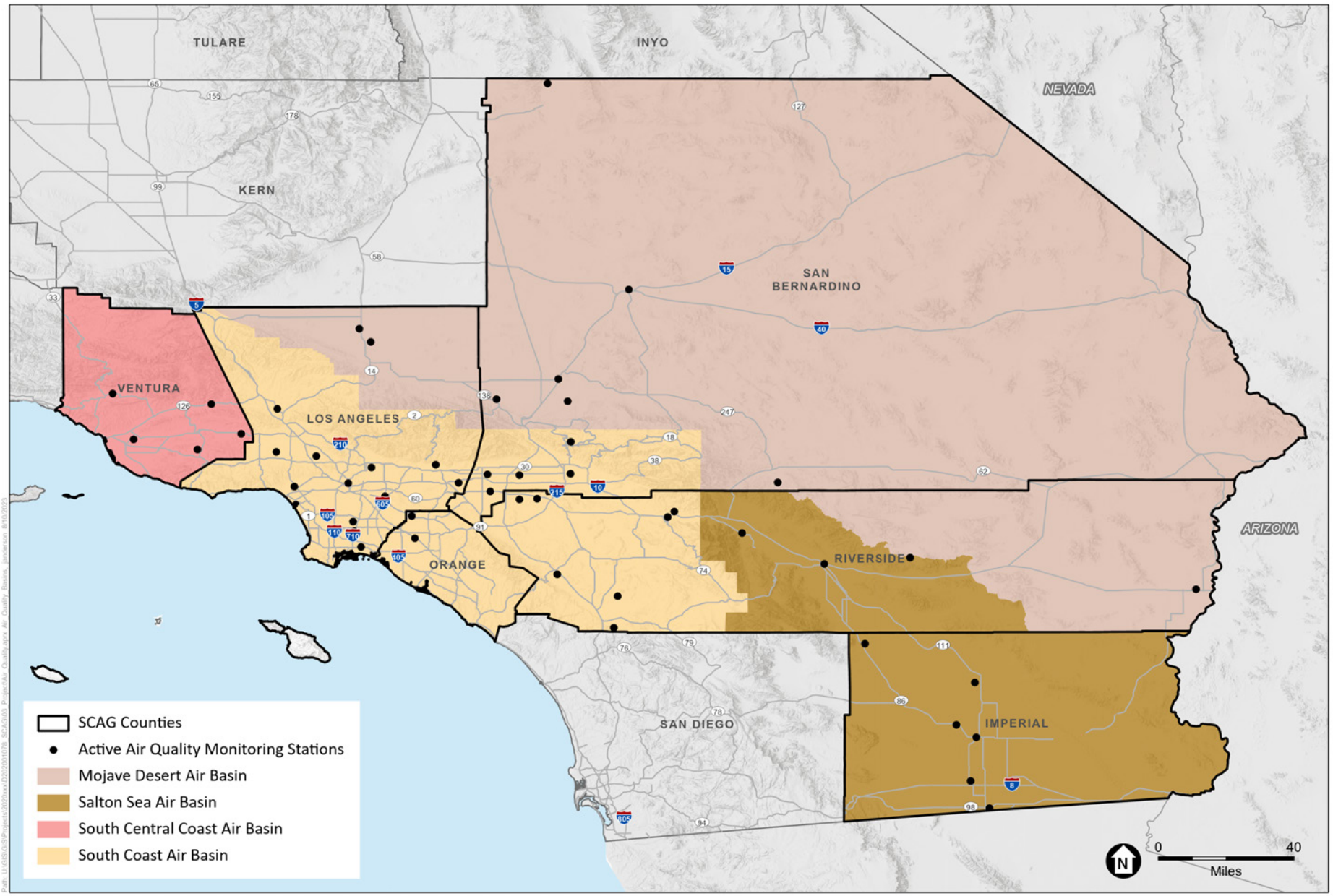
Map 3.3-1
Average Annual Concentration of PM2.5



SOURCE: CalEnviroScreen 4.0, 2021

Connect SoCal 2024 PEIR

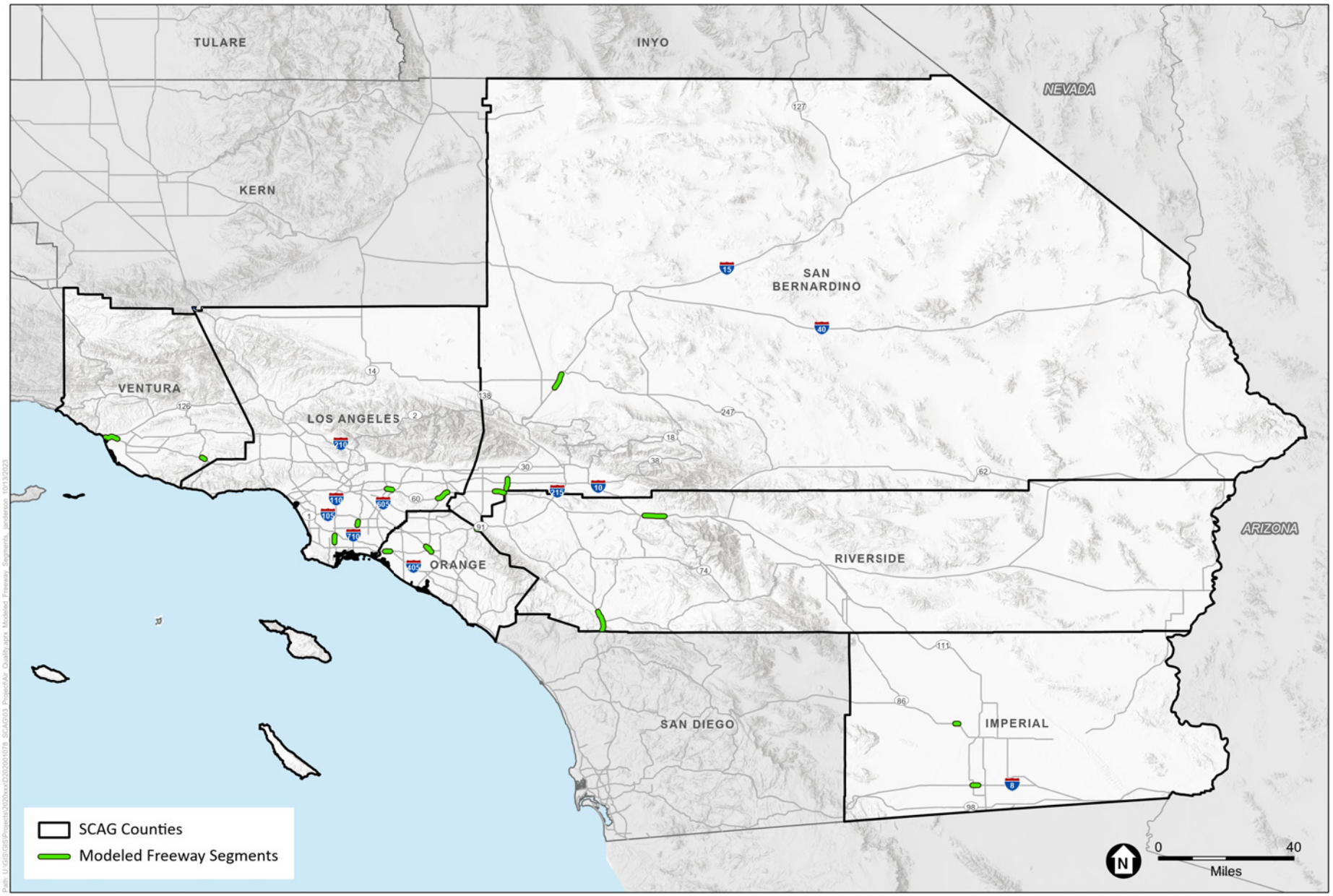
Map 3.3-2
Average Daily Ozone Exposure in Excess of National 8-Hour Standard



SOURCE: CalEnviroScreen 4.0, 2021; EPA, 2023

Connect SoCal 2024 PEIR

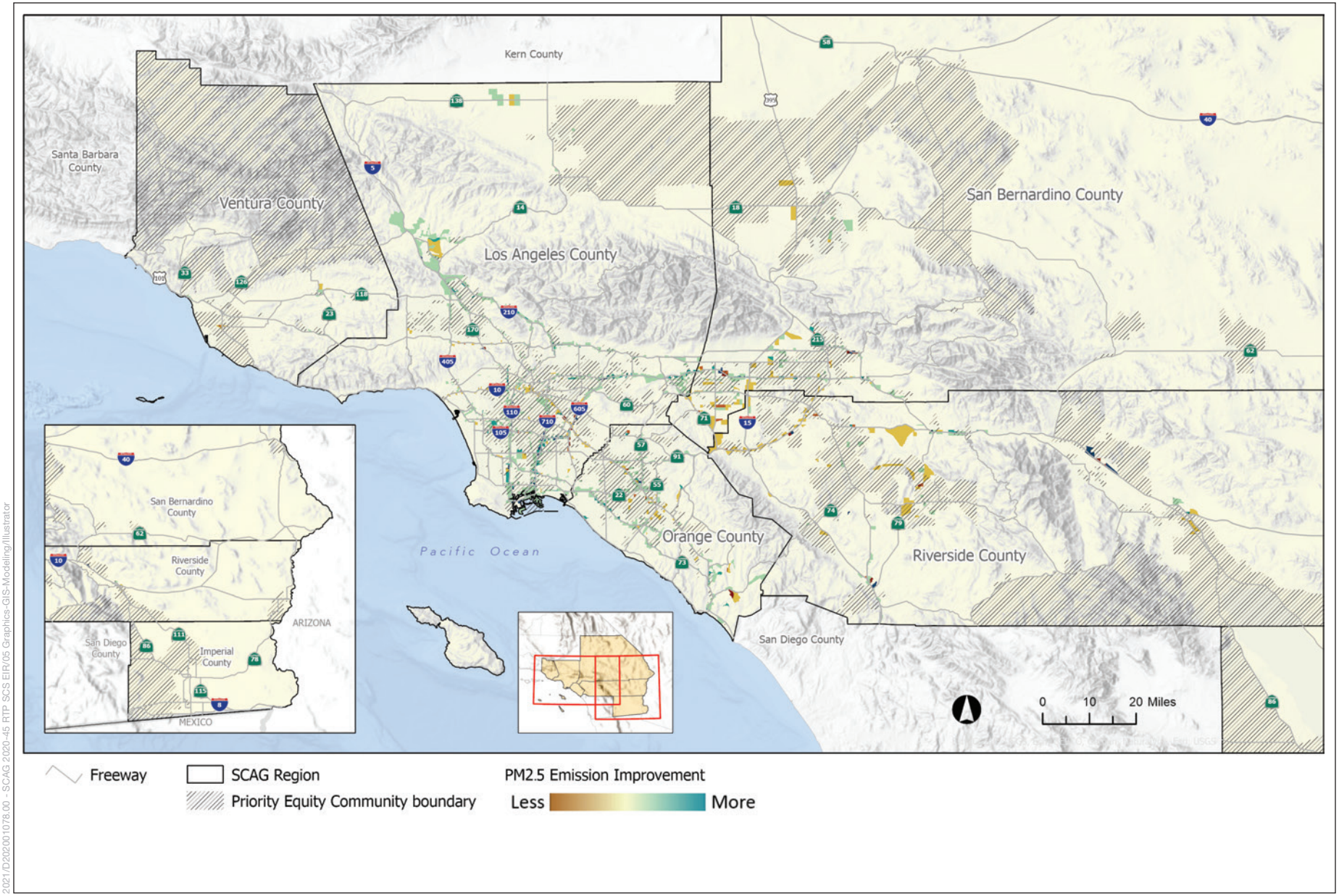
Map 3.3-3
Air Quality Basins and Monitoring Stations



SOURCE: SCAG, 2023

Connect SoCal 2024 PEIR

Map 3.3-4
Overview of Modeled Freeway Segments



2021/D202001078.00 - SCAG 2020-45 RTP SCS EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: SCAG, 2023

Connect SoCal 2024 PEIR

Map 3.3-5
SCAG Region AB 617 Community PM2.5 Emissions Improvements

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