4.3 AIR QUALITY

This section evaluates the potential impacts of the proposed Plan related to air quality. See Appendix C, *Air Quality Technical Report for the 2025 Regional Plan*, for more details on the air quality technical analysis.

4.3.1 Existing Conditions

TOPOGRAPHY AND CLIMATE

The proposed Plan area is within the San Diego Air Basin (SDAB), which includes all of San Diego County. The SDAB covers roughly 4,200 square miles, lies in the southwest corner of California, and encompasses all of the county. The region's population and emissions are concentrated mainly in the western portion of the county (SDAPCD 2024a).

Topography

The topography of the San Diego region is highly varied, comprising coastal plains and lagoons, flatlands and mesas, broad valleys, canyons, foothills, mountains, and deserts. Generally, buildings and structures are located on and in the flatlands, mesas, and valleys, while the canyons and foothills tend to be sparsely developed. This characteristic has led to the region being a conglomeration of separate cities with mostly low-density housing and an automobile-centric character. The topography in the SDAB, along with local meteorology, influences the concentrations of pollutants in the basin. San Diego County also shares an international border with Mexico (SDAPCD 2024a).

Climate

The climate of San Diego is classified as Mediterranean but exhibits substantial diversity because of the varied topography. The climate is dominated by the Pacific high-pressure system, which results in mild, dry summers and mild, wet winters. San Diego experiences an average of 150 days above 70°F and 8-12 inches of rainfall annually (mostly November–March). El Niño and La Niña patterns have large effects on the annual regional rainfall (SDAPCD 2024a).

An El Niño is a warming of the surface waters of the eastern Pacific Ocean. It is a climate pattern that occurs across the tropical Pacific Ocean that is associated with drastic weather occurrences, including enhanced rainfall in Southern California. La Niña is a term for cooler than normal sea surface temperatures across the Eastern Pacific Ocean. San Diego receives less than normal rainfall during La Niña years (SDAPCD 2024a).

The Pacific High drives the prevailing winds in the SDAB. The wind tends to blow onshore in the daytime and offshore at night. In the summer, an inversion layer forms over coastal areas, increasing ozone (O_3) levels. In the winter, San Diego often experiences a shallow inversion layer, which tends to increase carbon monoxide and $PM_{2.5}$ (particulate matter smaller than or equal to 2.5 microns in diameter) concentration levels due to the increased use of residential wood burning (SDAPCD 2024a).

In the fall months, the SDAB is often affected by Santa Ana winds. These winds are the result of a high-pressure system over the Nevada-Utah region that overcomes the westerly wind pattern and forces hot, dry winds from the east to the Pacific Ocean. When they occur, these winds are powerful and incessant. They blow the air basin's pollutants out to sea. However, weak Santa Ana conditions can transport air pollution from the South Coast Air Basin, greatly increasing ozone concentrations in the San Diego area. Strong Santa Ana wind conditions also prime the vegetation for firestorm conditions (SDAPCD 2024a).

POLLUTANTS OF CONCERN

The air quality analysis focuses on the following two types of air pollutants that are of greatest concern for the proposed Plan Area:

- **Criteria Pollutants.** Pollutants for which the US Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have set ambient air quality standards or that are chemical precursors to compounds for which ambient standards have been set. The criteria pollutants associated with Plan implementation are ozone and the precursors thereof (volatile organic compounds [VOC] and oxides of nitrogen [NO_X]), particulate matter (PM) (PM_{10} is PM smaller than or equal to 10 microns in diameter and $PM_{2.5}$ is PM smaller than or equal to 2.5 microns in diameter), carbon monoxide (CO), and sulfur dioxide (SO_2).
- **Toxic Air Contaminants.** The EPA has identified nine air toxic compounds associated with mobile sources as the considerable contributors to background air quality concerns. These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (DPM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter.

Criteria Pollutants

The federal and state governments have established the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) for six criteria pollutants: ozone, lead (Pb), CO, nitrogen dioxide (NO_2), SO_2, and PM_{10} and $PM_{2.5}$. The NAAQS and CAAQS for these six criteria pollutants were established with the goal of protecting the public's health from air pollution. Ozone is considered a regional pollutant because its precursors affect air quality on a regional scale. Pollutants such as CO, NO_2, SO_2, and Pb are considered local pollutants that tend to accumulate in the air locally. PM is both a local and a regional pollutant. The primary pollutants of concern relative to the proposed Plan are the ozone precursor pollutants VOC and NO_X (which react in the presence of sunlight to create ozone), CO, and PM.

All criteria pollutants can have human health and environmental effects at certain concentrations. The ambient air quality standards for these pollutants (Table 4.3-1) are set to protect public health and the environment with an adequate margin of safety (Clean Air Act Section 109). Epidemiological, controlled human exposure, and toxicology studies evaluate potential health and environmental effects of criteria pollutants, and form the scientific basis for new and revised ambient air quality standards.

Principal characteristics and possible health and environmental effects from exposure to the criteria pollutants of concern potentially generated by the proposed Plan are discussed below.

- **Ozone,** a component of urban smog, is not emitted directly into the air, but is created by chemical reactions between NO_X and VOC. This happens when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources chemically react in the presence of sunlight (EPA 2025a).

  VOC are compounds made up primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of VOC are emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. The two major forms of NO_X are nitric oxide (NO) and NO_2. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown gas formed by the combination of NO and oxygen. In addition to serving as an integral participant in ozone formation, NO_X also directly acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens.

  Ozone poses a higher risk to those who already suffer from respiratory diseases (e.g., asthma), children, older adults, and people who are active outdoors. Exposure to ozone at certain concentrations can make breathing more difficult, cause shortness of breath and coughing, inflame and damage the airways, aggravate lung diseases, increase the frequency of asthma attacks, and cause chronic obstructive pulmonary disease. Studies show associations between short-term ozone exposure and non-accidental mortality, including deaths from respiratory issues (Bell et al. 2004, Gryparis et. al. 2004). Studies also suggest long-term exposure to ozone may increase the risk of respiratory-related deaths (Lim et al. 2019). The concentration of ozone at which health effects are observed depends on an individual's sensitivity, level of exertion (i.e., breathing rate), and duration of exposure. Studies show large individual differences in the intensity of symptomatic responses, with one study finding no symptoms to the least responsive individual after a 2-hour exposure to 400 parts per billion of ozone, and a 50 percent decrement in forced airway volume in the most responsive individual. Although the results vary, evidence suggests that sensitive populations (e.g., people with asthma) may be affected on days when the 8-hour maximum ozone concentration reaches 80 parts per billion (EPA 2025a). The CAAQS and NAAQS for ozone are shown in Table 4.3-1.

In addition to its human health effects, ozone has been linked to crop damage, typically characterized by stunted growth, leaf discoloration, cell damage, and premature death. Ozone can also act as a corrosive and oxidant, resulting in property damage such as the degradation of rubber products and other materials.

- **Nitrogen Oxides** are formed by the combination of NO and oxygen through internal combustion. Short-term exposure to NO_2 can aggravate respiratory diseases, such as asthma, leading to increased hospital admissions, while long-term exposure may contribute to the development of asthma and potentially increase susceptibility to respiratory infections (EPA 2024b). Controlled studies demonstrated effects (airway reactivity) among people with asthma at a short-term (less than 3 hours) exposure to 0.3 parts per million (ppm) NO_2. Effects among healthy individuals occurred at high levels of exposure (1.5 to 2 ppm) (McConnell et al. 2002). For reference, the 1-hour CAAQS for NO_2 is 0.18 ppm (see Table 4.3-1). In addition to human health effects, NO_2 can also reduce visibility and react with water, oxygen, and other chemicals to contribute to acid rain, which can harm sensitive ecosystems (EPA 2024b).
- **Carbon Monoxide** is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. In the proposed Plan Area, high CO levels are of greatest concern during the winter, when periods of light winds combine with the formation of ground-level temperature inversions from evening through early morning. These conditions trap pollutants near the ground, reducing the dispersion of vehicle emissions. Moreover, motor vehicles exhibit increased CO emission rates at low air temperatures. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation. Exposure to CO at concentrations above the CAAQS or NAAQS (see Table 4.3-1) can also cause fatigue, headaches, confusion, dizziness, and chest pain. There are no ecological or environmental effects of ambient CO (CARB 2025a).
- **Particulate Matter** consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulate matter are now regulated—inhalable coarse particles, or PM_{10}, and inhalable fine particles, or $PM_{2.5}$. Particulate matter discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. Wind on arid landscapes also contributes substantially to local particulate loading. Additionally, secondary formation of PM, primarily in the form of fine particulate matter, occurs through the chemical transformation of precursors such as NO_X, SO_2, ammonia, and VOC.

  Particulate pollution can be transported over long distances and may have adverse effects on humans, particularly those who are naturally sensitive or susceptible to respiratory problems. Numerous studies have linked PM exposure to premature death in people with preexisting heart or lung disease. Other symptoms of exposure may include nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms. Exposure to concentrations of PM above the current ambient air quality standards may result in these health effects (EPA 2024c). Similar to ozone, the elderly and those with preexisting heart and lung diseases are at greater risk of the harmful effects of PM exposure. Children are also at increased risk because they breathe faster than adults, and therefore inhale more air per pound of body weight, and tend to spend more time outdoors. The CAAQS and NAAQS for PM are set to protect these sensitive populations and define the maximum amount of a pollutant averaged over a specified period of time that can be present in outdoor air without threatening the health of infants, children, or the elderly (CARB 2024a). The CAAQS and NAAQS for PM are shown in Table 4.3-1.

Depending on composition, both PM_{10} and $PM_{2.5}$ can also affect water quality and acidity, deplete soil nutrients, damage sensitive forests and crops, affect ecosystem diversity, and contribute to acid rain (EPA 2024d).

- **Sulfur dioxide** is a product of fuel combustion. The predominant source of SO_2 emissions within the San Diego region is mobile source fuel combustion, primarily aircraft, ocean-going vessels, and on-road vehicles. In recent years emissions of SO_2 have been significantly reduced by the increasingly stringent controls placed on the sulfur content of fuels used in stationary sources and mobile sources. SO_2 is a precursor to fine PM formation in the form of sulfates, such as ammonium sulfate. Short-term exposure to SO_2 can aggravate the respiratory system, making breathing difficult. Controlled laboratory studies indicate that brief exposure (5 to 10 minutes) of people with asthma that are engaged in exercise to an average SO_2 level of 0.4 ppm can result in increases in air resistance (Linn et al. 1987). Healthy adults do not show any symptoms even after up to 3 hours of exposure to SO_2 at levels as high as 1 ppm. Based on the concentration needed to protect sensitive individuals (e.g., people with asthma), CARB and EPA have adopted the CAAQS and NAAQS for SO_2 (see Table 4.3-1). In addition to public health impacts, SO_2 can also affect the environment by damaging foliage and decreasing plant growth (EPA 2024e).
- **Lead** is a soft metal that was previously added to gasoline and emitted to the environment through motor vehicle exhaust. Since lead was removed from gasoline, emissions have declined, and the primary source of emissions is now metal processing facilities and leaded aviation gasoline. Lead can also be resuspended into the air when contaminated soil or paints are disturbed. Lead emissions can be inhaled and ingested, leading to accumulation of lead particles in bones. Lead exposure can lead to cognitive function decrements, behavioral problems, kidney and heart disease, decreased immunity and red blood cell counts, and reproductive and developmental effects (CARB 2024b).

CAAQS have been established for other criteria pollutants, including sulfates, hydrogen sulfide, and vinyl chloride (see Table 4.3-1). However, these criteria pollutants are not affected by the proposed Plan and are not quantified. Vinyl chloride is associated with industrial processes, such as the production of polyvinyl chloride (PVC) plastic and vinyl products. Hydrogen sulfide is associated with natural gas extraction and processing, and natural emissions from geothermal fields. Moreover, while sulfates are primarily emitted from fossil fuel combustion, sulfates are part of $PM_{2.5}$; thus, they are included in $PM_{2.5}$ estimates herein. Additionally, while lead has both a CAAQS and a NAAQS, lead emissions are primarily associated with manufacturing, combustion of some aviation fuels, and battery recycling and manufacturing plants. Because lead is no longer a component in gasoline, lead emissions would be unaffected by the proposed Plan.

Toxic Air Contaminants

Toxic air contaminants (TACs) are pollutants that have the potential to increase cancer and acute or chronic health risks. The most relevant TAC associated with the proposed Plan is DPM. For TACs that are known or suspected carcinogens, CARB has consistently found that there are no levels or thresholds below which exposure is risk-free (17 California Code of Regulations (CCR) Section 93000). Therefore, no NAAQS or CAAQS exist for TACs. Individual TACs vary greatly in the risks they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA). Adverse health effects of TACs can be carcinogenic (cancer-causing), short-term (acute) noncarcinogenic, and long-term (chronic) noncarcinogenic. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to the brain and nervous system, and respiratory disorders.

The State Air Toxics Program (Assembly Bill [AB] 2588) identified over 200 TACs. EPA has assessed this expansive list of toxics and identified a master list of TACs as Mobile Source Air Toxics (MSATs) (EPA 2006). MSATs are compounds emitted from highway vehicles and nonroad equipment. Some toxic compounds are present in fuel and are emitted into the air when the fuel evaporates or passes through the engine unburned. Other TACs are emitted from the incomplete combustion of fuels or as secondary combustion products. Metallic TACs also result from engine wear or from impurities in oil or gasoline.

Under the federal Clean Air Act (CAA), controlling air toxic emissions became a national priority, whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants (HAPs). The EPA assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (EPA 2007) and identified a group of 93 compounds emitted from mobile sources that are part of EPA's Integrated Risk Information System.

In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment. These nine compounds include: 1,3-butadiene, acetaldehyde, acrolein, benzene, DPM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. The EPA also maintains a database called SPECIATE, which is used to estimate emissions of all known HAPs.

Health effects from TACs and HAPs, including cancer and chronic noncancer risks from on-road traffic, have been associated primarily with diesel PM, benzene, and 1, 3-butadiene. In addition to these three compounds, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest existing ambient TAC risk for which data are available within California. However, other TACs, including those listed in SPECIATE, also contribute to some risk.

For purposes of this analysis, pollutants that have the potential to increase the risk of developing cancer or acute or chronic health risks are referred to as TACs.

Diesel Particulate Matter Exposure and Human Health Impacts

Most of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being DPM. DPM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. DPM is emitted from both mobile and stationary sources. Diesel exhaust consists of two phases: gas and particles, and both contribute to the health risk. The gas phase is composed of many of the urban TACs, such as acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, and polycyclic aromatic hydrocarbons. The particle phase is also composed of many different types of particles by size and composition. Fine and ultrafine diesel particulates are of the greatest health concern and may be composed of elemental carbon with adsorbed compounds such as organic compounds, sulfate, nitrate, metals, and other trace elements.

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. Diesel exhaust causes health effects from both short-term or acute exposures, and long-term chronic exposures. The type and severity of health effects depend upon several factors, including the amount of chemical exposure and the duration of exposure. Individuals also react differently to different levels of exposure.

DPM emissions are believed to be responsible for about 70 percent of California's estimated known cancer risk attributable to TACs. DPM comprises about 8 percent of outdoor $PM_{2.5}$ concentrations, which is a known health hazard. DPM contributes to numerous health impacts that have been attributed to PM exposure, including increased hospital admissions, particularly for heart disease, but also for respiratory illnesses, and premature death. CARB estimates that diesel PM contributes to approximately 1,400 (95 percent confidence interval: 1,100-1,800) premature deaths from cardiovascular disease annually in California. Additionally, exposure to diesel exhaust may contribute to the onset of new allergies; a clinical study of human subjects has shown that diesel exhaust particles, in combination with potential allergens, may produce new allergies that did not exist previously (CARB 2021a).

Ultrafine Particulate Matter

Ultrafine particulate matter (UFP) refers to a subfraction of currently regulated $PM_{2.5}$ and PM_{10} size particles. Although the operational definition of UFP varies in scientific literature, it is generally accepted that particles with size less than 100 nanometers (0.1 micrometer) are labeled as UFPs (Baldauf et al. 2015). Although UFPs contribute only a small amount to total PM mass, they have a large surface area and often very high concentrations. Because of its small size, a given mass of UFP contains thousands to tens of thousands more particles, with a correspondingly larger surface area, than an equivalent mass of $PM_{2.5}$ or PM_{10}. This means that a given mass of UFP can impact a larger surface area of lung tissue than an equal mass of $PM_{2.5}$ or PM_{10}, thus increasing exposure (EPA 2024c). The predominant source of UFP is fuel combustion in on-road vehicles, off-road vehicles, and stationary sources (CARB 2006). Concentrations of UFP have been found to be substantially higher at locations proximate to and downwind of high-volume roadways, particularly roadways travelled by diesel-powered vehicles (Health Effects Institute 2013). Studies have also shown that commuters using non-automobile travel (e.g., bicycles) have a higher risk of exposure and adverse health impacts if commuting occurs along roadways (Panis et al. 2010). Moreover, evidence suggests that UFP can penetrate the microclimate within vehicles, causing increasingly more exposure to UFP among those with long commutes (Bigazzi and Figliozzi 2012).

Other Air Toxics

Other TACs are emitted from the combustion of non-diesel fuels, primarily gasoline. In total, the EPA has identified 188 pollutants, which include known TACs from sources, including fuel combustion, as well as tire and brake wear emissions. SPECIATE includes not only the nine priority TACs from mobile sources from FHWA (1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter), but also various other compounds that are known TACs and HAPs (e.g., arsenic, nickel, selenium).

CARB notes that DPM, which is composed of black carbon and numerous organic compounds (i.e., polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene), is responsible for 70 percent of the total known cancer risk related to air toxics in California (CARB 2025b.).

Odors

Odor sources commonly associated with negative human response include wastewater treatment plants, sanitary landfills, composting facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting operations, rendering plants, food packaging plants, and cannabis growing activities. Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person’s reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

Sensitive Receptors

Sensitive receptors are locations where individuals with pollutant-sensitive conditions may reside. CARB has identified the following groups as being most likely to be affected by air pollution: children under 14, the elderly over 65, athletes, and individuals with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder-care facilities, elementary schools, and parks. Health studies indicate that health effects on sensitive receptors are the highest within 1,000 feet of emission sources (CARB 2005).

Ambient Air Quality Conditions

The federal CAA requires EPA to designate areas within the country as either attainment or nonattainment for each criteria pollutant based on whether the NAAQS have been achieved. Similarly, the California CAA (CCAA) requires CARB to designate areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. If a pollutant concentration is lower than the state or federal standard, the area is classified as being in attainment for that pollutant. If a pollutant violates the standard, the area is considered a nonattainment area. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated unclassified. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data show that a state standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events (e.g., wildfires) are not considered violations of a state standard and are not used as a basis for designating areas as nonattainment. CAAQS and NAAQS, as well as the attainment status for each, are summarized in Table 4.3-1.

The CAA identifies two types of NAAQS: primary and secondary. Primary standards provide public health protection, including protecting the health of "sensitive" populations such as people with asthma, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Only the primary standards are presented in Table 4.3-1 because those standards are set to protect public health.

Table 4.3-1 Ambient Air Quality Standards and Current SDAB Attainment Status

Pollutant	Averaging Time	Ambient Air Quality Standards			Attainment Status	
		California (CAAQS)[a,b] Standards	National (NAAQS)[c] Standards - Primary[b,d]	National (NAAQS)[c] Standards – Secondary [b,d]	California (CAAQS)[a,b]	National (NAAQS)[c]
Ozone	1-hour	0.090 ppm (180 μg/m^3)	—	—	Nonattainment	—
	8-hour	0.070 ppm (137 μg/m^3)	(2015) 0.070 ppm (137 μg/m^3)	Same as Primary	Nonattainment	Severe Nonattainment
			(2008) 0.075 ppm (148 μg/m^3)	(Same as Primary		Severe Nonattainment
Carbon monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—	Attainment	Attainment
	8-hour	9 ppm[f] (10 mg/m^3)	9 ppm (10 mg/m^3)	—	Attainment	Attainment
Nitrogen dioxide (NO_2)	Annual arithmetic mean	0.030 ppm (57 μg/m^3)	53 ppb (100 μg/m^3)	Same as Primary	Attainment	Attainment
	1-hour	0.18 ppm (339 μg/m^3)	100 ppb (188 μg/m^3)	—	Attainment	Attainment
Sulfur dioxide (SO_2)	24-hour	0.04 ppm (105 μg/m^3)	—	—	Attainment	—
	3-hour	—	—	0.5 ppm (1300 μg/m^3)	Attainment	—
	1-hour	0.25 ppm (655 μg/m^3)	75 ppb (196 μg/m^3)	—	Attainment	Attainment
Respirable particulate matter (PM_{10})	Annual arithmetic mean	20 μg/m^3	—	—	Attainment	—
	24-hour	50 μg/m^3	150 μg/m^3	Same as Primary	Nonattainment	Unclassified/ Attainment
Fine particulate matter ($PM_{2.5}$)	Annual arithmetic mean	12 μg/m^3	9.0 μg/m^3	15 μg/m^3	Nonattainment	Unclassified/ Attainment
	24-hour	—	35 μg/m^3	Same as Primary	—	Unclassified/ Attainment
Lead [e]	Calendar quarter	—	1.5 μg/m^3	—	—	Attainment
	30-Day average	1.5 μg/m^3	—	—	Attainment	—
	Rolling 3-Month Average	—	0.15 μg/m^3	0.15 μg/m^3	—	Attainment
Hydrogen sulfide	1-hour	0.03 ppm (42 μg/m^3)	—	—	Unclassified	No national standards
Sulfates	24-hour	25 μg/m^3	—	—	Attainment	
Vinyl chloride [e]	24-hour	0.01 ppm (26 μg/m^3)	—	—	Unclassified	
Visibility-reducing particulate matter	8-hour	Extinction of 0.23 per km	—	—	Unclassified	

Notes: μg/m^3 = micrograms per cubic meter; km = kilometers; ppb = parts per billion; ppm = parts per million (by volume).

[a] California standards for ozone, carbon monoxide, SO_2 (1- and 24-hour), NO_2, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[c] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than 1. The $PM_{2.5}$ 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[d] National primary standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[e] CARB has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. This allows for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Sources: CARB 2023; CARB 2024a; EPA 2025b.

Air quality is monitored by the San Diego County Air Pollution Control District (SDAPCD) at various monitoring sites throughout the region. The monitoring network has been designed to provide criteria pollutant monitoring coverage for most of the inhabited areas of the region. The purpose of air monitoring is to identify areas where pollutant levels exceed federal and state ambient air quality standards, then develop strategies and regulations to achieve the emission reductions necessary to meet all NAAQS and CAAQS. Data from the ambient monitoring network are then used to indicate the success of the regulations and control strategies in terms of the rate of progress towards attaining the standards or to demonstrate that standards have been attained and maintained.

Table 4.3-2 below displays the ambient air quality monitoring stations operated by the SDAPCD, along with the pollutants measured at each location.

Annual air quality data from the monitoring stations are summarized in SDAPCD's Annual Air Quality Monitoring Network Reports and Five-Year Air Quality Summary. The most recent Air Quality Monitoring Network Report at the time of Draft EIR preparation was the 2023 Annual Report, which summarizes monitoring concentrations, exceedances, and the number of days during the 2021-2023 time period (SDAPCD 2024a). Monitoring data are also reported to CARB and maintained within CARB's statewide Aerometric Data Analysis and Management (ADAM) air quality database (CARB 2025c). The Annual Report provides data by monitoring station, whereas the ADAM database also provides a summary of the data for the entire SDAB. Notably, CARB no longer monitors CO concentrations in the SDAB due to declining emissions resulting from an increasingly cleaner vehicle fleet and local air district rules for stationary sources). However, the EPA still monitors CO at three locations within the SDAB: 11403 Rancho Carmel Drive in Carmel Mountain Ranch, 533 First Street in El Cajon (Lexington Elementary School), and 198 W. San Ysidro Blvd in San Ysidro. In addition, the EPA monitors SO_2 at a single location: 533 First Street in El Cajon (Lexington Elementary School).

A summary of monitoring data is provided in Table 4.3-3. The data includes a summary of data from CARB (for all pollutants except CO and SO_2) and EPA (for CO and SO_2). For each pollutant, the value shown is the maximum of the observed concentrations in the SDAB for each year.

Based on data provided by SDAPCD (Canter pers. comm.), the Donovan station is in violation of the 24-hour PM_{10} and the revised annual $PM_{2.5}$ NAAQS, and the Sherman Elementary station is in violation of the annual $PM_{2.5}$ NAAQS. There are no violations of the PM_{10} and $PM_{2.5}$ NAAQS at the other monitoring stations. Currently, all stations except for Rancho Carmel exceed the annual PM_{10} CAAQS, all stations except for Lexington Elementary exceed the 24-hour PM_{10} CAAQS, and only Donovan exceeds the annual $PM_{2.5}$ CAAQS.

Table 4.3-2 Ambient Air Monitoring Stations in The San Diego Region

Monitoring Station	Pollutant Measured						
	O_3	PM_{10}	$PM_{2.5}$	CO	NO_2	SO_2	Lead
Alpine	✓		✓		✓		
Camp Pendleton	✓		✓		✓		
Chula Vista	✓	✓	✓		✓		
Donovan-Otay Mesa	✓	✓	✓		✓		
El Cajon-Lexington Elementary School	✓	✓	✓	✓	✓	✓	
Kearny Mesa-Kearny Villa Road	✓	✓	✓		✓		
Boulevard-La Posta	✓						
Palomar-McClellan Airport							✓
San Diego-Rancho Carmel Drive				✓	✓		
San Diego-Sherman Elementary	✓		✓		✓		
San Diego-San Ysidro				✓			

Source: CARB 2025d; EPA 2025c.

Table 4.3-3 Summary of Annual Ambient Air Quality Data (2018–2023) – San Diego Air Basin

Pollutant Standards	2018	2019	2020	2021	2022	2023
Carbon Monoxide (CO)						
Maximum concentration (1-hour, ppm)	1.9	4.1	3.3	3.0	2.2	2.7
Number of days national standard exceeded (1-hour)	0	0	0	0	0	0
Maximum concentration (8-hour, ppm)	1.4	2.5	1.7	1.8	1.2	2.1
Number of days national standard exceeded (8-hour)	0	0	0	0	0	0
Nitrogen Dioxide (NO_2)						
Maximum concentration (1-hour, ppm)	55.0	86.0	58.0	61.0	64.6	63.2
Number of days state standard exceeded (1-hour)	0	0	0	0	0	0
Number of days national standard exceeded (1-hour)	0	0	0	0	0	0
Annual Average (ppm)	15	14	14	13	15	13
Ozone (O_3)						
Maximum concentration (1-hour, ppm)	0.102	0.110	0.123	0.099	0.114	0.104
Number of days state standard exceeded (1-hour)	2	2	5	2	2	3
Maximum concentration (8-hour, ppm)	0.083	0.085	0.102	0.080	0.088	0.086
Number of days state standard exceeded (8-hour)	22	18	28	15	24	32
Number of days national standard exceeded (8-hour)	20	16	24	15	24	27
Particulate Matter (PM_{10})						
Maximum concentration (24-hour, $\mu g/m^3$)	55	199	179	123	151	75
Number of days state standard exceeded (24-hour)	3	8	*	*	*	*
Number of days national standard exceeded (24-hour)	0.0	6.6	15.0	0.0	0.0	*
Annual average ($\mu g/m^3$)	26.3	31.4	50.8	43.0	42.1	19.2

Pollutant Standards	2018	2019	2020	2021	2022	2023
Particulate Matter ($PM_{2.5}$)						
Maximum concentration (24-hour, µg/m^3)	41.9	23.8	51.9	30.2	28.9	40.7
Number of days national standard exceeded (24-hour)	1	0	3	0	0	1
Annual average (µg/m^3)	10.0	8.6	10.7	9.7	9.0	9.0
Sulfur Dioxide (SO_2)						
Maximum concentration (1-hour, ppb)	3.5	0.8	1.7	1.6	0.8	0.7
Maximum concentration (24-hour, ppb)	0.4	0.3	0.4	0.3	0.3	0.3

Notes: * = data not available.

Sources: CARB 2024c; EPA 2025d.

Attainment Status

As noted in Table 4.3-1, the San Diego region is currently designated as a severe nonattainment area for the 2008 8-hour ozone NAAQS and a severe nonattainment area for the 2015 8-hour ozone NAAQS (EPA 2024f). The SDAB is also classified as a nonattainment area with respect to the 1-hour ozone, 8-hour ozone, $PM_{2.5}$, and PM_{10} CAAQS. Accordingly, the SDAPCD (discussed in more detail below) is required to prepare and submit to the EPA, through CARB, a plan identifying control measures and associated emission reductions as necessary to demonstrate attainment for each ozone standard as part of the State Implementation Plan (SIP) (CARB 2020a).

As for other NAAQS, the San Diego region became an attainment area (along with every other area of the state except for the South Coast Air Basin) for CO on June 1, 2018, following a 20-year maintenance period. Accordingly, because conformity only applies to nonattainment and maintenance areas, transportation conformity requirements for CO in the San Diego region ceased on June 1, 2018 (EPA 2024g). The San Diego region is in attainment for all other NAAQS, including NO_2, ozone, PM_{10} and $PM_{2.5}$, SO_2, and Pb.

On February 7, 2024, the EPA promulgated a revised primary annual $PM_{2.5}$ NAAQS, strengthening the standard from 12.0 micrograms per cubic meters (µg/m^3) to 9.0 µg/m^3. Following promulgation of a new or revised NAAQS, the EPA is required under Clean Air Act Section 107(d) to designate all areas of the country with respect to the standard. The deadline for U.S. EPA to finalize designations is February 6, 2026 (CARB 2024d). As of August 2025, EPA has not issued designations with respect to the new annual $PM_{2.5}$ standard, and San Diego County remains designated as an attainment area for annual $PM_{2.5}$ NAAQS.

Local Air Quality

CARB has developed the California Emissions Projection Analysis Model (CEPAM), which provides historical data as well as projections of future year emissions at different scales of interest in the state. Table 4.3-4 presents the emissions inventory for the SDAB for the year 2022 by CEPAM emission category.

Table 4.3-4 Criteria Pollutant Emissions Inventory for 2022 – San Diego Air Basin

Emission Category	Emissions (tons per day)					
	ROG[1]	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Fuel Combustion	1.1	13.5	3.5	0.2	1.3	1.3
Waste Disposal	1.7	0.2	0.3	0.0	2.7	0.6
Cleaning and Surface Coatings	15.5	—	—	—	—	—
Petroleum Production and Marketing	5.9	—	—	—	—	—
Industrial Processes	2.1	0.3	0.3	0.0	4.7	0.9
Solvent Evaporation	28.6	—	—	—	—	—
Miscellaneous Processes	6.3	17.4	3.3	0.2	67.4	12.1
On-Road Motor Vehicles	14.7	119.0	24.0	0.3	5.0	2.2
Other Mobile Sources	24.0	192.1	26.8	0.5	2.7	2.5

Emission Category	Emissions (tons per day)					
	ROG^1	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Natural Sources	80.2	110.1	4.6	1.5	12.8	10.8
Total	180.1	452.5	62.8	2.9	96.7	30.5

[1] The terms VOC and ROG are used interchangeably, although ROG is used in this table because CARB uses the term ROG in its CEPAM modeling.

Source: CEPAM 2019v1.04, CARB 2024e.

SOURCES OF AIR POLLUTION

Emission sources are normally grouped into four main categories: stationary, area-wide, mobile, and natural sources. Generally, stationary and area-wide sources are those attached to the ground, while mobile sources, as the name implies, are those involved in the movement of people and goods. Natural emission sources refer to emissions that are non-anthropogenic (not human-caused) sources. Each of these categories is usually further divided into major source categories and then summary categories. The sections below provide a brief description of these four main categories.

Stationary Emission Sources

Stationary source emissions, also referred to as point-source emissions, are emissions from major industrial, manufacturing, and processing plants. This category also includes emissions from electric utilities; waste burning; solvent use; petroleum processing, storage, and transfer; and industrial processes.

Mobile Emission Sources

There are two major categories under mobile emissions:

- **On-Road Mobile Sources**: This major source category accounts for the emissions from all types of vehicles licensed to travel on public roads and highways. This includes passenger cars, light- and medium-duty trucks, heavy-duty gas and diesel trucks, heavy-duty urban diesel buses, and motorcycles.
- **Off-Road Mobile Sources**: This major category accounts for vehicular emissions from construction equipment, farm tractors, off-road recreational vehicles, trains, ships, aircraft, mobile equipment, utility equipment, and lawn mowers.

Area-Wide Emission Sources

Area-wide sources are those that individually emit small quantities but collectively result in substantial emissions when aggregated over a larger area. Emissions result from landscaping; natural gas consumption; small industrial engines; solvent use in dry cleaning; auto repair, auto body, and paints; wood burning; industrial coatings; consumer products; printing; bakeries and restaurants; asphalt paving; and fugitive dust.

Natural Emission Sources

Natural sources are non-anthropogenic emission sources, which include biological and geological sources, wildfires, windblown dust, and biogenic emissions from plants and trees.

Anticipated Effects Of Climate Change

The Intergovernmental Panel on Climate Change (IPCC) predicts that the global mean surface temperature increase by the end of the 21st century (2081–2100), relative to 1986–2005, could range from 0.5 to 8.7 °F (IPCC 2023). In the San Diego region, this translates to wetter winters and more intense precipitation that can lead to increased flooding, more frequent and intense droughts, more intense heat waves and annual average temperatures increases of up to 4.8°F by 2050, and a longer and less predictable fire season (Climate Education Partners and San Diego Foundation [CEP and SDF] 2015, Kalansky et al. 2018, Ocean Protection Council [OPC]

2018). Climate change may worsen air quality in the San Diego region by influencing the increase of ground-level ozone, wildfire, and droughts.

Ground level ozone is a pollutant that is created by chemical reactions between NOx and VOCs that can pose serious risk to human health and the environment. This happens when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources chemically react in the presence of sunlight (EPA 2025a). Hot, sunny days can increase ozone levels and higher temperatures increase the risk of ozone-related premature death (Reidmiller et al. 2018). Ozone levels in the United States are often highest in Southern California and given anticipated temperatures rises in the region, higher temperatures will increase ozone pollution (Reidmiller et al. 2018).

Wildfire smoke contains gaseous pollutants (e.g., carbon monoxide), hazardous air pollutants (HAPs) (e.g., polycyclic aromatic hydrocarbons [PAHs]), water vapor, and particle pollution (EPA 2025). Exposure to these pollutants and fine particulate matter ($PM_{2.5}$) can cause mortality and cardiovascular disease and is associated with onset and worsening of respiratory conditions (Law et al. 2025). As climate change exacerbates wildfire risk, $PM_{2.5}$ emissions from wildfires have increased, worsening air quality. Furthermore, precipitation during dry seasons, which can help fight wildfires and may play a part in clearing away air pollution (Western Fire Chiefs Association [WFCA] 2024), is projected to decrease due to climate change (Kalansky et al. 2018).

Droughts, which are anticipated to be longer and more severe in the region, may also cause deteriorated health and air quality issues due to increased levels of dust. Dust pollution leads to an increase in allergies, asthma, and other respiratory issues. Additionally, in the southwestern United States, drier conditions increase the reproduction of Coccidiodes, a fungus found in soils, that leads to coccidioidomycosis (Valley fever) which causes flu-like symptoms (Kalansky et al. 2018).

4.3.2 Regulatory Setting

The Plan Area is subject to air quality regulations developed and implemented at the federal, state, and regional levels. At the federal level, EPA is responsible for implementation of the CAA. Some portions of the CAA (e.g., certain mobile-source and other requirements) are implemented directly by EPA. Other portions of the CAA (e.g., stationary-source requirements) are implemented by state and local agencies.

Responsibility for attaining and maintaining air quality in California is divided between CARB and regional air quality districts. Areas of control for the regional districts are set by CARB, which divides the state into air basins. Plans, policies, and regulations relevant to the proposed Plan are discussed below.

FEDERAL LAWS, REGULATIONS, PLANS AND POLICIES

In March 2025, the current administration announced that the EPA will undertake 31 actions, focusing primarily on reconsidering actions adopted by previous administrations, including numerous actions and regulations related to air quality and the reduction of GHG emissions (which often have the co-benefit of reducing air pollutant emissions). These include, but are not limited to, reconsideration of Air Toxics Standards that target coal-fired power plants, the revised $PM_{2.5}$ NAAQS, and fuel economy standards, among others. As of the writing of this DEIR, none of these regulations have been repealed or replaced with newly adopted regulations. Therefore, these regulations are discussed below.

Federal Clean Air Act

The federal CAA, as amended, is the primary federal law that governs air quality nationwide. The CAA was first enacted in 1963 and has been amended numerous times in subsequent years (1967, 1970, 1977, and 1990). The CAA establishes the NAAQS and specifies future dates for achieving compliance with these standards. The CAA also mandates that each state submit and implement a SIP for local areas not meeting those standards (42 U.S.C. Section 179 [d][1]). The plans must include pollution control measures that demonstrate how the standards will be met.

The federal CAA Amendments of 1990 (amendments made to Section 107 (d) of the CAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution (EPA 2024h). EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments and whether implementation will achieve air quality goals. If EPA determines a SIP to be inadequate, it may prepare a federal implementation plan that imposes additional control measures. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be imposed relative to transportation funding, requirements for stationary air pollution sources, and other consequences.

The sections of the CAA that would most substantially affect the development of the proposed Plan include Title I (Nonattainment Provisions) and Title II (Mobile-Source Provisions).

Title I provisions were established with the goal of attaining the NAAQS for criteria pollutants. Table 4.3-1 shows the NAAQS currently in effect for each criteria pollutant. The NAAQS were amended in July 1997 to include an 8-hour standard for ozone and adopt a standard for $PM_{2.5}$. The 8-hour ozone NAAQS was further amended in October 2015 to lower the standard to 0.070 parts per million. Additionally, EPA amended the $PM_{2.5}$ annual arithmetic mean standard to 9 µg/m^{3}in 2024 (down from 12.0 µg/m^{3}previously). In accordance with the requirements of CAA Section 107 (d), States were expected to submit initial recommendations of areas that do not attain this standard to the EPA by February 2025, and EPA is expected to finalize area designations by February 2026 (40 CFR 51). $PM_{2.5}$ SIPs will be due 18 months after the effective date of designations, with attainment required at the end of the calendar year six years after designations, unless an area is reclassified to Serious - Nonattainment. As of January 2025, CARB staff recommend that San Diego County, along with various other areas of the State, be designated as nonattainment for the 9.0 µg/m^3 annual $PM_{2.5}$ standard. As noted above, the current administration has stated its intent to review the most current $PM_{2.5}$ NAAQS, which may affect the designation process for areas throughout the state. The deadline for U.S. EPA to finalize designations is February 6, 2026 (CARB 2024f).

California's SIP is updated periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The 2022 State SIP Strategy, adopted on September 22, 2022, is the most current SIP and is a compilation of plans and regulations that govern how the state and regions will comply with the CAA requirements to attain and maintain the NAAQS for ozone and $PM_{2.5}$.

<u>California's CAA Preemption Waiver</u>

The CCAA allows California to seek authorization to enforce its own standards for new nonroad engines and vehicles, despite the preemption which prohibits states from enacting emission standards for new nonroad engines and vehicles. According to the CCAA Section 209 - State Standards, EPA shall grant an authorization under section 209(e)(2), unless the Administrator finds that California:

- was arbitrary and capricious in its finding that its standards are, in the aggregate, at least as protective of public health and welfare as applicable federal standards;
- does not need such standards to meet compelling and extraordinary conditions; or
- California's standards and accompanying enforcement procedures are not consistent with this section.

The CCAA also allows other states to adopt California's motor vehicle emission standards under section 177. Section 177 requires, among other things, that such standards be identical to the California standards for which a waiver has been granted. States are not required to seek EPA approval under the terms of section 177.

The CCAA also allows other states to adopt California's nonroad vehicle or engine emission standards under section 209(e)(2)(B). Section 209(e)(2)(B) requires, among other things, that such standards be identical to the California standards for which an authorization has been granted. States are not required to seek EPA approval under the terms of section 209(e)(2)(B).

Please see the "Fuel Economy and Emissions Standards" section below regarding recent legal developments affecting some of the recent California CAA waivers.

Transportation Conformity

Transportation conformity is required by the CAA Section 176(c) (42 USC Section 7506[c]) to ensure that federal funding and approval are given to highway and transit projects that are consistent with (and conform to) the air quality goals established by a SIP. The conformity requirement prohibits the U.S. Department of Transportation and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to SIP for attaining the NAAQS. Conformity means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS (EPA 2024g).

Transportation conformity applies to highway and transit projects and is assessed on two levels: the regional (or planning and programming) level and the project level. Regional conformity is used to assess how well the regional transportation system supports plans for attaining the NAAQS. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years (for the RTP) and 4 years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the CAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA) make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the CAA.

Note that this EIR does not address Regional Plan CAA conformity. Conformity documentation was prepared separately by SANDAG and is contained within Appendix C of the proposed Plan.

Project-level conformity requirements only apply in areas that are designated nonattainment or maintenance areas with respects to particulate matter ($PM_{2.5}$ and PM_{10}) and CO NAAQS. The San Diego region is currently designated as attainment for particulate matter ($PM_{2.5}$ and PM_{10}) and CO NAAQS. Therefore, project level conformity does not apply and no further is provided.

Title III of the CAA and Hazardous Air Pollutants

The 1990 Amendments to the CAA included the addition of Title III, a provision to address air toxics. Under Title III of the CAA, EPA establishes and enforces National Emission Standards for Hazardous Air Pollutants (NESHAPs), which are nationally uniform standards oriented toward controlling particular HAPs. Section 112(b) of the CAA identifies 189 "Air Toxics" (HAPs, since modified to 187 pollutants), directs EPA to identify sources of the HAPs, and establishes a 10-year time period for EPA to issue technology-based emissions standards for each source category. Emission standards have been developed for all of the stationary source categories under 40 Code of Federal Regulations (CFR) Part 63. The purpose of Title III of the CAA provides for a second phase under which EPA is to assess residual risk after the implementation of the first phase of standards and to impose new standards, when appropriate, to protect public health.

The EPA regulates TACs through statutes (i.e., 42 USC Section 7412[b]) and regulations that generally require the use of the maximum achievable control technology or best available control technology for toxics to limit emissions. The emissions standards enumerated herein also have a measurable effect on emissions of TACs, particularly diesel PM.

Fuel Economy and Emission Standards

EPA has adopted regulations to improve fuel economy and limit emissions from all sources of pollutants. EPA regulates the emissions from mobile sources by setting standards for the specific pollutants being emitted. Emissions standards set limits on the amount of pollution a vehicle or engine can emit. Mobile source emission standards have been established for light-duty vehicles, trucks, and motorcycles; heavy duty trucks; and non-road engines, including aircraft, locomotives, marine vessels, and recreational engines and vehicles. The EPA has also established gasoline and diesel fuel standards (EPA 2025e).

A description of fuel economy and emission standards for sources analyzed in this EIR is included herein.

Corporate Average Fuel Economy Standards

The Corporate Average Fuel Economy Standards (CAFE) were first enacted in 1975 to improve the average fuel economy of cars and light duty trucks. In 2024, CAFE standards were finalized for model years (MYs) 2027 through 2031. The final rule establishes standards that require an industry-wide fleet average of approximately 49 miles per gallon (mpg) for passenger cars and light trucks. The final rule establishes standards that would require an industry-wide fleet average of approximately 50.4 mpg in MY 2031 for passenger cars and light trucks and an industry fleet-wide average for heavy-duty pickup trucks and vans (HDPUVs) of roughly 2.851 gallons per 100 miles in MY 2035. The final CAFE standards increase at a rate of 2 percent per year for passenger cars in MYs 2027–2031 and 2 percent per year for light trucks in model years 2029–2031. The final HDPUV fuel efficiency standards increase at a rate of 10 percent per year in MYs 2030–2032 and 8 percent per year in MYs 2033–2035 (NHTSA 2024).

Multi-Pollutant Emissions Standards for Light— and Medium-Duty Vehicles

The EPA has established a series of increasingly strict emission standards for new light-duty vehicle engines. These standards were phased-in over four tiers:

- Tier 1 standards were published as a final rule on June 5, 1991, and phased-in progressively between 1994 and 1997 (40 CFR Part 86).
- Tier 2 standards were adopted on December 21, 1999, with a phase-in implementation schedule from 2004 to 2009 (40 CFR Part 80).
- Tier 3 standards were finalized on March 3, 2014, to be phased-in between 2017 and 2025 (40 CFR Parts 79, 80, 85, 86, 600, 1036, 1037, 1039, 1042, 1048, 1054, 1065, and 1066).
- Tier 4 standards were finalized on March 20, 2024, with a phase-in schedule from 2027 through 2033 (40 CFR Parts 85, 86, 600, 1036, 1037, 1066, and 1068).

Tier 1 standards applied to all new light-duty vehicles (LDV) of less than 8,500-pound gross vehicle weight rating (GVWR). The Tier 2 rule extended the applicability of the light-duty emission standards to medium-duty passenger vehicles (MDPV) with GVWR between 8,500 and 10,000 pounds. Tier 3 and Tier 4 regulations additionally include emission standards for chassis-certified heavy-duty vehicles up to 14,000 pounds (Class 2b and Class 3). The successive tiers of emission regulations do not begin with a sharp cut-off date. Rather, each new tier of emission standards is phased in over a number of years. During the phase-in period, manufacturers are required to certify an increasing percentage of their new vehicle fleet to the new standards, with the remaining vehicles still certified to the preceding tier of emission regulations (EPA 2024i).

Emission Standards for Medium- and Heavy-Duty Vehicles

EPA and NHTSA also set fuel efficiency and GHG standards for medium- and heavy-duty trucks. In 2011, EPA and NHTSA finalized a joint rule that established a national program to reduce GHG emissions and improve fuel economy for new medium- and heavy-duty engines and vehicles. These standards have the co-benefit of reducing air pollutants related to medium- and heavy-duty trucks. This rule—called the Phase 1 standards—requires fuel efficiency standards for engines in model years 2014 through 2018 (40 CFR Parts 85, 86, 1036, 1037, 1065, 1066, and 1068). In 2016, EPA and NHTSA adopted the Phase 2 standards, which require fuel efficiency standards for engines in model years 2018 through 2027 (40 CFR Parts 9, 22, 85, 86, 600, 1033, 1036, 1037, 1039, 1042, 1043, 1065, 1066, and 1068) (EPA 2016).

Emission Standards for Non-Road Diesel Engines

EPA established a series of increasingly strict emission standards for new non-road diesel engines. Tier 1 standards were phased in on newly manufactured equipment from 1996 through 2000 (year of manufacture), depending on the engine horsepower category (40 CFR Part 89). Tier 2 standards were phased in on newly manufactured equipment from 2001 through 2006 (40 CFR part 89). Tier 3 standards were phased in on newly manufactured equipment from 2006 through 2008 (40 CFR part 89). Tier 4 standards, which require advanced emission control technology to attain them, were phased in between 2008 and 2015 (40 CFR Part 1039). These emissions standards apply to all non-road (off-road) equipment that is anticipated to be used to construct elements of the Regional Plan (EPA 2004).

Emission Standards for Locomotives

The EPA established a series of increasingly strict emission standards for new or remanufactured locomotive engines (63 FR 18997-19084). Tier 0 standards, effective as of 2000, applied to engines manufactured or remanufactured from 1973 to 2001. Tier 1 standards applied to engines manufactured/remanufactured from 2002 to 2004. Tier 2 standards applied to engines manufactured/remanufactured after 2004.

In 2008, EPA strengthened the Tier 0 through 2 standards to apply to existing locomotives and introduced more stringent Tier 3 and 4 emission requirements (73 FR 88 25098-25352). Tier 3 standards, met by engine design methods, were phased in between 2011 and 2014. Tier 4 standards, which are expected to require exhaust gas after-treatment technologies, became effective starting in 2015. These standards apply to locomotives that are propelled by engines with total rated horsepower (hp) of 750 kilowatts (kW) (1,006 hp) or more (EPA 2009).

These emissions standards apply to all locomotive engines greater than 750 kW (1,006 hp) in the San Diego region. Engines smaller than 750 kW, including the 440-hp diesel-multiple unit (DMU) engines that power some Coaster and Sprinter activity, are regulated under the emission standards for non-road diesel engines, discussed above. All freight (BNSF) and intra-regional passenger (Amtrak and Metrolink) trains are regulated under these standards.

Public Law No. 119-15

On June 12, 2025, Public Law 119-15, enacting House Joint Resolution 87, was signed into law. The law utilized the Congressional Review Act to disapprove EPA's rule that had granted California a waiver to enforce stricter emissions standards for heavy-duty vehicles under the Clean Air Act. The disapproved rule included programs such as the Advanced Clean Trucks regulation and zero-emission requirements for airport shuttles. Passed under the Congressional Review Act, the law prevents EPA from implementing or reissuing the same or similar rules without new congressional authorization. This effectively blocks California, and other states that follow its standards, from enforcing these specific vehicle emission and warranty regulations. The implications of this law on the State's capability to enforce its independent heavy-duty vehicle regulations are uncertain at this time, as the California Attorney General filed a lawsuit challenging P.L. No. 119-15 on June 12, 2025. Whether this action will be successful is unknown, as is the possibility that a federal judge will issue a stay to halt the implementation of the heavy-duty vehicle regulations during the legal process. Notably, as discussed under the analysis of project impacts in Section 4.3.3, "Environmental Impacts and Mitigation Measures," the conformity analysis prepared for the proposed Plan uses EMFAC2017 and the EIR uses EMFAC2021 to estimate mobile source emissions. EMFAC2017 does not account for California's stricter emissions standards for heavy-duty vehicles because these regulations had not yet been adopted at the time the EMFAC2017 methodology was last updated, and thus were not factored into the modeling. Although EMFAC2021 does assume implementation of California's heavy-duty vehicle regulations, EIR mobile source emissions were calculated prior to the June 12, 2025 disapproval of California's emissions standards for heavy-duty vehicles, there is legal uncertainty about enforceability of the federal disapproval of these regulations, and CARB had provided no guidance on how to address this issue in EMFAC2021 modeling at the time of EIR preparation. Given these considerations, at the time of EIR preparation, EMFAC2017 and EMFAC2021 were the most appropriate methodologies for the EIR to use to calculate mobile source emissions.

Public Law No. 119-16

Similarly on June 12, 2025, Public Law No. 119-16, enacting House Joint Resolution 88, became law. The law also relied on the Congressional Review Act to disapprove the EPA's December 2024 waiver under the CAA that allowed California to implement and enforce the Advanced Clean Cars II (ACC II) regulation. ACC II included a zero-emission vehicle (ZEV) mandate targeting 100% new light-duty ZEV sales by 2035. P.L. No. 119-16 marks the first ever occurrence that waivers under the CAA have been revoked under the Congressional Review Act. The implications of this law on the State's capability to enforce its independent fuel economy standards are uncertain at this time, as the California Attorney filed a lawsuit challenging P.L. No. 119-16 on June 12, 2025. Whether this action will be successful is unknown, as is the possibility that a federal judge will issue a stay to halt the implementation of the ACC II regulation during the legal process. Notably, as discussed under the analysis of project impacts in Section 4.3.3, "Environmental Impacts and Mitigation Measures," the conformity analysis prepared for the Project,1 uses EMFAC2017 and the EIR uses EMFAC2021 to calculate mobile source emissions estimates. These analyses do not account for ACC II because ACC II had not yet been adopted at the time the EMFAC2017 or EMFAC2021 methodologies were last updated, and thus were not factored into the modeling.

Public Law No. 119-17

Public Law 119–17, enacted on June 12, 2025, disapproves, under the Congressional Review Act, of the EPA's rule titled "California State Motor Vehicle and Engine and Nonroad Engine Pollution Control Standards; The 'Omnibus' Low NOX Regulation; Waiver of Preemption; Notice of Decision." The law disapproves the EPA's January 6, 2025, Low-NO_x rule that would have granted California a waiver to enforce stricter emissions standards for both on-road and non-road heavy-duty engines. Similar to the other CRA resolutions listed above targeting emissions waivers, this law prohibits the EPA from reissuing the same or substantially similar rule without new authorization from Congress. The law effectively blocks California, and any states following its standards, from implementing this omnibus Low-NO_X regulatory package. The implications of this law on the State's capability to enforce its low NO_X rule are uncertain at this time, as the California Attorney filed a lawsuit challenging P.L. No. 119-1 on June 12, 2025. Whether this action will be successful is unknown, as is the possibility that a federal judge will issue a stay to halt the implementation of the low NO_x rule during the legal process.

Notably, as discussed under the analysis of project impacts in Section 4.3.3, "Environmental Impacts and Mitigation Measures," the conformity analysis prepared for the Project uses EMFAC2017 and the EIR uses EMFAC2021 to calculate mobile source emissions estimates. Although the EMFAC2017 post-processing adjustment factor and EMFAC2021 both assume implementation of the Low NO_X rule, EIR mobile source emissions were calculated prior to the June 12, 2025 disapproval of the Low NO_X rule, there is legal uncertainty about enforceability of the federal disapproval of these regulations, and CARB had provided no guidance on how to address this issue in EMFAC modeling at the time of EIR preparation. Given these considerations, at the time of EIR preparation, EMFAC2017 and EMFAC2021 were the most appropriate methodologies for the EIR to use to calculate mobile source emissions.

Endangerment Finding

As mentioned in Section 4,8, "Greenhouse Gas Emissions," on December 7, 2009, the EPA administrator found that the current and projected concentrations of the six key well-mixed GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations. On July 29, 2025, EPA announced a proposal to rescind the Endangerment Finding and, repeal all GHG emission standards for light-duty, medium-duty, and heavy-duty vehicles and engines pursuant to CAA section 202(a). The proposed rule would remove GHG-related provisions from 40 CFR part 600 without affecting provisions related to CAFE standards and fuel economy labeling. In general, the proposed rule would remove MY 2012 and later GHG emission standards for passenger cars and light trucks, and MY 2014 and later GHG emission standards for medium-duty vehicles (EPA 2025b). These regulatory repeals would also affect motor vehicle criteria pollutant emissions estimates using EMFAC2017 (used for the conformity analysis) and EMFAC2021 (used for the EIR mobile source emissions estimates), which both assumed implementation of certain federal emissions standards proposed for repeal. As of writing this EIR, EPA has not adopted this proposal (EPA 2025b), and CARB had provided no guidance on how to address this issue in emissions modeling. Given these considerations, at the time of EIR preparation, EMFAC2017 and EMFAC2021 were the most appropriate methodology for the EIR to use to estimate air quality impacts.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

The State of California has adopted numerous laws addressing various aspects of air quality. CARB is the primary air resources agency, whose mission is to reduce air pollution and protect. CARB establishes state regulations to reduce emissions from all major sources of emissions air pollution. A summary of key State laws, regulations, plans, and policies, are relevant to the proposed Plan is provided below, organized by general categories.

California Clean Air Act

Mulford-Carrel Act

CARB was established when the California Legislature passed the Mulford-Carrell Act in 1967, which combined two bureaus within the Department of Health: the Bureau of Air Sanitation and the Motor Vehicle Pollution Control Board. CARB's mission is to promote and protect public health, welfare, and ecological resources through the effective and efficient reduction of air pollutants, while recognizing and considering the effects on the state's economy. CARB also oversees the activities of 35 local and regional air pollution control districts. These districts regulate industrial pollution sources. They also issue permits, develop local plans to attain healthy air quality, and ensure that industrial operations in their area adhere to air quality mandates (CARB 2025d).

California Clean Air Act

In 1988, the state legislature adopted the CCAA, which established a statewide air pollution control program. CCAA requires all air districts in the state to endeavor to meet the CAAQS by the earliest practical date. Unlike the federal CAA, the CCAA does not set precise attainment deadlines. Instead, the CCAA establishes increasingly stringent requirements for areas that will require more time to achieve the standards. CAAQS are generally more stringent than the NAAQS and incorporate additional standards for sulfate, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The CAAQS and NAAQS are listed together in Table 4.3-1.

CARB and local air districts are responsible for achieving California's air quality standards, which are to be achieved through district-level air quality management plans that are incorporated into the SIP. In California, the EPA has delegated authority to prepare SIPs to CARB, which, in turn, has delegated that authority to individual air districts. CARB traditionally has established state air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving SIPs.

The CCAA substantially adds to the authority and responsibilities of air districts. The CCAA designates air districts as lead air quality planning agencies (HSC Sections 40000 and 40001), requires air districts to prepare air quality plans (HSC Section 40918), and grants air districts authority to implement transportation control measures (HSC Section 40717[a]). The CCAA also emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish traffic control measures.

On-Road Vehicle Standards and Programs

- **Advanced Clean Cars Program (passenger vehicles).** AB 1493 of 2002 (known as Pavley I, Chapter 200, Statutes of 2002) provided the nation's first GHG standards for automobiles. AB 1493 required CARB to adopt vehicle standards that lowered GHG emissions from new light-duty automobiles to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards referred to as the Advanced Clean Cars (ACC) Program's Low Emission Vehicle (LEV) III Regulation was adopted for vehicle model years 2017–2025 in 2012 (13 California Code of Regulations [CCR] Section 1900 et seq.).

  The ACC Program also includes the Zero Emission Vehicle Program and the Clean Fuels Outlet Regulation. The Zero Emission Vehicle Program is designed to achieve California's long-term emission reduction goals by requiring manufacturers to offer for sale specific numbers of ZEVs, which include battery electric, fuel cell, and plug-in hybrid electric vehicles. The Clean Fuels Outlet regulation is intended to ensure that fuels, such as electricity and hydrogen, are available to meet the fueling needs of new advanced technology vehicles as they come to market. The Advanced Clean Cars II (ACC II) Program was adopted by CARB in August 2022 and provides the regulatory framework for ensuring the sales requirement goal of EO N-79-20 to ultimately reach 100% ZEV sales in the state by 2035. The EPA granted CARB its California's CAA waiver request on December 18, 2024; however, as noted above, P.L. 119-16 rescinded California's waiver under the CAA.

- **AB 126:** Signed by Governor Newsom on October 7, 2023, AB 126 includes provisions to provide, upon appropriation by the legislature, funding in the form of grants, revolving loans, loan guarantees, loans, or other appropriate funding measures to various private and public entities to help attain the state's climate change policies. AB 126 is intended to facilitate the development and deployment of zero-emission technology and fuels in the marketplace where feasible and near-zero-emission technology and fuels elsewhere. Provisions related to electric vehicles (EVs) and EV infrastructure include creation of the Air Quality Improvement Program (HSC Section 44274[a]) to provide funding for zero-emission fuel projects where feasible and near-zero-emission fuel projects elsewhere to develop and improve zero-emission and near-zero-emission fuels (Health and Safety Code [HSC] Section 44272 [h][1]), a program to provide funding for homeowners who purchase a plug-in electric vehicle to offset costs associated with modifying electrical sources to include a residential plug-in electric vehicle charging station (HSC Section 44272 [h][13]). Awardees of funding for EV-charging infrastructure are required to report to the California Energy Commission (CEC) "the source and greenhouse gas emissions intensity, on an annual basis, of the electricity used and dispensed by electric vehicle charging stations at the meter" (HSC Section 44272 [m]). Funding is also authorized to be provided toward incentives for medium- and heavy-duty vehicles and equipment mitigation, including electric, hybrid, and plug-in hybrid on-road and off-road medium- and heavy-duty equipment (HSC Section 44274 [c][4]).

- **Low Carbon Fuel Standard.** The Low Carbon Fuel Standard (LCFS) originally mandated that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020 (17 CCR Section 95480 et seq.). In September 2018, to help achieve SB 32's emission reduction target, the LCFS regulation was amended to increase the statewide goal to a 20% reduction in carbon intensity of California's transportation fuels by at least 2030. Note that most of the emissions benefits from the LCFS come from the production cycle (upstream emissions) of the fuel rather than the combustion cycle (tailpipe) (CARB 2024g). On January 3, 2025, CARB submitted the final proposed amendments to the LCFS regulation to the Office of Administrative Law (OAL) for review in accordance with Government Code Section 11349.1 (CARB 2025d). On February 18, 2025, OAL issued a routine disapproval of amendments to the LCFS regulation on technical grounds, not on the merits of the regulation. CARB staff made necessary revisions and resubmitted the regulation for OAL approval on May 16, 2025 (CARB 2025d). On June 27, 2025, OAL approved this rulemaking and filed it with the Secretary of State with an effective date of July 1, 2025 (CARB 2024g).
- **Truck and Bus Regulation**. The Truck and Bus Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles (referred to as the Truck and Bus Regulation) (13 CCR Section 2025) requires fleet owners to upgrade their vehicles to meet specific performance standards for NO_X and PM. The regulation applies to diesel-fueled trucks and buses that are privately owned, federally owned, and to publicly and privately owned school buses, that have a manufacturer's gross vehicle weight rating (GVWR) greater than 14,000 pounds. Nearly all of the vehicles affected by the regulation are on-road vehicles, however, the regulation also applies to yard trucks with off-road engines used for agricultural operations and two-engine street sweepers with such engines. The Truck and Bus Regulation targets emissions reductions through 2010 Model Year Emissions Equivalent Engine requirements, PM Best Available Control Technology (BACT) requirements, and Verified Diesel Emission Control Strategy (VDECS) requirements. EPA approved the revision to the SIP to include the Truck and Bus Regulation on April 4, 2012 (40 CFR 52).
- **Zero-Emission Trucks.** In September 2000, CARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles (CARB 2000). As an ongoing process, CARB reviews air contaminants and identifies those that are classified as TACs. CARB also continues to establish new programs and regulations for the control of TACs. CARB has adopted diesel exhaust control measures and more stringent emissions standards for various transportation-related mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). These regulations include the Advanced Clean Fleets regulation, the Advanced Clean Trucks Regulation, and the Innovative Clean Transit (ICT) regulation, discussed separately in this section. Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel particulate matter [diesel PM]) have been reduced significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations)

and control technologies. With implementation of CARB's Risk Reduction Plan and other regulatory programs, CARB estimates that by 2035, emissions of diesel PM will be less than half of those in 2010 (CARB 2025b).

- **Advanced Clean Trucks**. CARB adopted the Advanced Clean Trucks (ACT) Regulation in March 2021, with minor amendments in 2024. The regulation aims to accelerate the sales of heavy-duty EVs. The regulation consists of two parts: a manufacturer component and a fleet reporting component. Manufacturers are required to sell an increasing percentage of heavy-duty ZEV between 2024 and 2035. By 2035, 40% of Class 8 truck purchases will be required to be zero emission. Fleets with 50 or more vehicles will be required to report on their fleet's composition and activities in order to help CARB craft new strategies to hasten the adoption of ZEV (CARB 2021b). EPA granted the waiver request for the ACT regulation on April 6, 2023 (EPA 2023). However, P.L. 119-15 retroactively revoked the state's waiver issued by EPA under the CAA to implement the Advanced Clean Trucks regulation.

- **Advanced Clean Fleets.** CARB's 2022 Advanced Clean Fleets regulation was developed to reduce diesel PM through the transition of medium- and heavy-duty trucks to become fully electric by 2045. At the time of the writing of this Draft EIR, California has withdrawn its request for a waiver and authorization for the addition of the Advanced Clean Fleets regulation to its emissions control program (CARB 2025e). CARB is not enforcing the existing portions of the Advanced Clean Fleets regulation that require a federal waiver or authorization, such as the portions of the Advanced Clean Fleet regulation that apply to high-priority and drayage fleets. However, not all elements of the Advanced Clean Fleets regulation require a federal waiver or authorization (CARB 2025e). State and local government fleets will still be required to be fully electric by 2045.

- **Innovative Clean Transit.** The Innovative Clean Transit (ICT) regulation was adopted in 2018 and requires all public transit agencies to incrementally reduce fleet vehicle tailpipe emissions and prioritize first- and last-mile connectivity and improved mobility for transit riders. Additionally, the ICT regulation provides various exemptions and compliance options to provide safeguards and flexibility for transit agencies through this emission reduction schedule. The ICT regulation was developed to align with other state policies, including the Sustainable Communities and Climate Protection Program (SB 375), and SB 350. SB 375 creates initiatives for increased development of transit-oriented communities, better-connected transportation, and active transportation. SB 350 provides an opportunity for transportation electrification, including wide use of zero-emission buses. The California Public Utilities Commission (CPUC) is collaborating with CARB and CEC to implement requirements set forth by SB 350 to support widespread transportation electrification. Through the deployment of zero-emission technologies, the ICT regulation will provide significant benefits across the state, including:

  - reducing NO_x and GHG emissions for all Californians, especially transit-dependent and disadvantaged communities; most of these benefits will be in the state's most populated and impacted areas where transit buses are most prevalent
  - increasing penetration of the first wave of zero-emission heavy-duty technologies into applications that are well suited to their use to further achieve emission reduction benefits
  - saving energy and reducing dependency on petroleum and other fossil fuels
  - expanding the ZEV industry to bring high-quality green jobs to local communities and trained workforce to California
  - providing other societal benefits by encouraging improved mobility and connectivity with zero-emission transportation modes and reduced growth in light-duty VMT.

  The goal of this program is for transit agencies to maximize these benefits, while providing flexibility and sufficient time for transit agencies to address potential challenges and use available funds. This regulation strives to not just maintain but enhance transit service through increased mobility options and has built-in technological and financial safeguards to ensure transit service or fares are not adversely impacted by the regulation (13 CCR 2023).

Off-Road Vehicle Standards

- **In-Use Off-Road Diesel-Fueled Fleets Regulation** The In-Use Off-Road Diesel-Fueled Fleets Regulation (In-Use Offroad Regulation) applies to all existing self-propelled off-road diesel vehicles 25 horsepower or greater used in California and most two-engine vehicles (except on-road two-engine sweepers). This includes vehicles that are rented or leased (rental or leased fleets) (13 CCR Section 2449). The In-Use Off-Road Regulation primarily targets air pollutant reductions by imposing limits on equipment idling; requiring all vehicles to be reported to CARB through the online DOORS reporting system; requiring fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies; and implementing a phase-out schedule for older, high-emissions engines.
- **Transportation Refrigeration Units**. CARB's 2022 amendments to the 2004 Transport Refrigeration Unit (TRU) Airborne Toxic Control Measure (2022 TRU Amendments) increases the stringency of TRU $PM_{2.5}$ standards and requires the electrification of diesel-powered TRU trucks by 2029. On January 3, 2025, U.S. EPA granted California Clean Air Act authorization of elements of its TRU Regulation (90 FR 2000). In its action, EPA did not act on the Regulation's requirements for the turnover of at least 15 percent of diesel-fueled truck TRU fleet to zero emissions by December 31, 2023, (and each year thereafter) within the 2022 TRU Amendments (EPA 2025f). As of January 2025, CARB has withdrawn its request for the requirements of the TRU Regulation (CARB 2025h).
- **CARB Zero-Emission Forklift Regulation.** In June 2024, CARB approved for adoption the Zero-Emission Forklift Regulation. The measure was identified in CARB's Mobile Source Strategy, SIP, and Sustainable Freight Action Plan as one of several near-term actions intended to help California meet its air quality and climate goals through zero-emission technology. The regulation requires California fleets to phase out forklifts that utilize large spark-ignition (LSI) engines with a lift capacity of up to 12,000 pounds over time. The regulation implements a restriction on the purchase of LSI forklifts starting on January 1, 2026, and phase-out requirements starting on January 1, 2028, for existing LSI forklifts.
- **Heavy-Duty Low-NO_X Omnibus Regulation:** Adopted by CARB in 2021 (effective December 22, 2021; amended in May 2024), mandates steep reductions in NO_X and PM emissions from new medium- and heavy-duty diesel and Otto-cycle engines starting with model year 2024. The rule requires NO_X emissions to drop from 0.20 grams per brake horsepower per hours (g/bhp-hr) (2010 baseline) to 0.050 g/bhp-hr from 2024–26, and further down to 0.020 g/bhp-hr by 2027, while tightening PM standards to 0.005 g/bhp-hr. It also revamps in-use testing (including low-load conditions), extends engine useful-life and warranty periods, and labels engines meeting "Clean Idle" standards. By full rollout, the regulation is projected to eliminate approximately 17–23 tons/day of NO_X by 2031, prevent thousands of premature deaths and hospitalizations, and produce tens of billions in health-related benefits. As noted above, P.L. 119-17 rescinded California's waiver to implement this regulation.

Toxic Air Contaminants

California regulates TACs primarily through the Toxic Air Contaminant Identification and Control Act (Tanner Act), the Air Toxics "Hot Spots" Information and Assessment Act of 1987 ("Hot Spots" Act). Toxic Air Contaminant Identification and Control Act of 1983, and the Diesel Risk Reduction Plan of 2000.

- Toxic Air Contaminant Identification and Control Act (Tanner Act [California Health and Safety Code Section 39650 et seq.]). In the early 1980s, CARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Act created California's program to reduce exposure to air toxics.
- Air Toxics "Hot Spots" Information and Assessment Act (California Health and Safety Code Section 44300 et seq.). The "Hot Spots" Act supplements the Tanner Act by requiring a statewide air toxics inventory, notification of people who were exposed to a significant health risk, and facility plans to reduce these risks. The "Hot Spots" Act requires OEHHA to develop an approach for health risk assessments that can be used to determine the "likelihood of risks." The resultant guidance manual is titled Air Toxics Hot-Spots Program Guidance Manual for the Preparation of Health Risk Assessments (OEHHA 2015).

- Diesel Risk Reduction Plan and Related Regulatory Programs. In September 2000, CARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles (CARB 2000). As an ongoing process, CARB reviews air contaminants and identifies those that are classified as TACs. CARB also continues to establish new programs and regulations for the control of TACs. CARB has adopted diesel exhaust control measures and more stringent emissions standards for various transportation-related mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). These regulations include the Advanced Clean Fleets Regulation, the Advanced Clean Trucks Regulation, and the ICT Regulation, discussed separately in this section. Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) have been reduced significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies.

California State Priority Action Plan

California's State Priority Action Plan (PCAP) was developed to achieve GHG reductions across the geographic extent of California from nearly every economic sector, and would also achieve reductions of air pollutants (CARB 2024h). The PCAP includes several elements: a 2021 statewide GHG emissions inventory, an overview of the State's overarching GHG targets codified by AB 32 and AB 1279, an overview of the State's approach to low-income and disadvantaged community benefits analysis, workforce considerations, and GHG reduction measures that target reduction in the transportation, industrial, energy, high global warming potential, agriculture, natural and working lands, and waste sectors. The PCAP was developed to support statewide GHG reduction target through implementation of the following reduction measures:

<u>Transportation Measures:</u>

- Create a Holistic, Heavy-Duty Zero-Emissions Vehicle Buydown Program
- Install Truck Charging to Support Zero-Emissions Goods Movement at California Ports and Warehouse Districts
- Advance the Deployment of Clean Off-Road Equipment
- Bolster Investments in the State's Sustainable Port and Freight Infrastructure
- Support Mobility Projects Uplifted by Communities
- Allow for Local Deployment of ZEV Infrastructure and Low-Income ZEV Support

<u>Industrial Measure:</u>

- Accelerate Industrial Decarbonization by expanding the existing Industrial Decarbonization and Improvement to Grid Operations Program

<u>Energy Measures:</u>

- Expand Decarbonization through the Energy Conservation Assistance Act
- Create a Funding Program to Upgrade the Capacity of Distribution Systems
- Expand the Success of California's Self Generation Incentive Program for Behind the Meter Energy Storage
- Bolster Healthy Landscapes and Resilient Communities through Expanding the Biomass to Carbon Negative Biofuels Program
- Deploy Equitable Building Decarbonization 6. Implement Bioenergy Projects
- Enable Renewable Microgrids for Rural Communities and Tribes

High Global Warming Potential Gases Measure:

- Expand F-gas Reduction Incentive Program

Agriculture Measures:

- Expand California's Healthy Soils Practices
- Reduce Methane Emissions by Expanding California's existing Dairy Digester Research and Development Program

Natural and Working Lands Measures:

- Bolster California's Forest Health Program
- Expand Urban and Community Forest Projects
- Expand the State's Wetland Restoration Program

Waste Measures:

- Food Waste Prevention and Edible Food Recovery Program
- Bolster Organics Recycling Infrastructure

California Sustainable Freight Action Plan

The Sustainable Freight Action Plan (Sustainable Freight Action Plan or Action Plan) provides an integrated action plan that establishes clear targets to improve freight efficiency, transition to zero-emission technologies, and increase the competitiveness of California's freight system. The Action Plan was developed by several state agencies and is a recommendation document that integrates investments, policies, and programs across several state agencies to help realize a singular vision for California's freight transport system. This Action Plan provides a recommendation on a high-level vision and broad direction to the Governor to consider for state agencies to utilize when developing specific investments, policies, and programs related to the freight transport system that serves California's transportation, environmental, and economic interests. Furthermore, CARB's *2022 Scoping Plan* incorporates actions from the Action Plan that provide GHG emissions reduction benefits, such as 100 percent line haul ZEV locomotive sales by 2035 (CARB 2016a).

Senate Bill 535 and Assembly Bill 1532 of 2012

Senate Bill 535 requires the California Environmental Protection Agency to identify disadvantaged communities based on geographic, socioeconomic, public health, and environmental hazard criteria. It also requires that the investment plan developed and submitted to the Legislature pursuant to AB 1532 allocate no less than 25 percent of available proceeds from the carbon auctions held under AB 32 to projects that will benefit these disadvantaged communities. At least 10 percent of the available funds from these auctions must be directly invested in such communities. The CalEnviroScreen tool has been developed to identify areas disproportionately affected by pollution and those areas whose populations are socioeconomically disadvantaged. The most current version of the tool is CalEnviroScreen 4.0, released in October 2021 (OEHHA 2023).

CARB Climate Change Scoping Plan

The first CARB Scoping Plan (Scoping Plan) was adopted in 2008 and updated in 2014, 2017, and 2022. The first Scoping Plan laid out the state's strategy for achieving the 2020 GHG reduction target. It includes numerous recommended measures to reduce GHG emissions from a variety of activities and sources, including on-road transportation, electricity generation, and building energy use. In 2017, the Scoping Plan was updated to reflect the state's 2030 GHG reduction target. CARB adopted the *Final 2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan) on December 16, 2022. The 2022 Scoping Plan traces the state's pathway to achieve its goals of carbon neutrality and an 85 percent reduction in 1990 emissions goal by 2045, as codified by AB 1279 in September 2022. These targets are in line with scientifically established levels to limit the rise in global temperature to no more than 2 degrees Celsius (°C), the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected; these targets also pursue efforts to limit the temperature increase even further to 1.5 °C (United Nations 2015). The 2022 Scoping Plan identifies the reductions needed by each GHG emission sector (e.g., transportation [including off-road mobile source emissions], industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste) to achieve these goals. The 2022 Scoping Plan details a multitude of strategies for reducing GHG emissions in each of these sectors which would have the co-benefit of reducing air pollutant emissions by shifting the state energy profile away from fossil fuels. Examples of strategies include achieving a per capita VMT reduction of at least 25 percent below 2019 levels by 2030 and 30 percent below 2019 levels by 2045 to reduce GHGs from the transportation sector, and achieving three million all-electric and electric-ready homes by 2030 and seven million by 2035, with six million heat pumps installed statewide by 2030 to reduce GHG emissions in the commercial and residential building sector.

While the Scoping Plan itself is a plan to reduce GHG emissions, many of the measures and strategies implemented to reduce GHGs from across the economy also result in significant reductions in criteria pollutants (CARB 2022).

California State Implementation Plan

2016 SIP

The 2016 Eight-Hour Ozone Attainment Plan (2016 SIP) addresses the requirements for attaining the 2008 8-hour ozone NAAQS. The 2016 SIP complies with the previous moderate nonattainment area classification for the planning requirements and includes demonstrations for attainment of the 2008 ozone NAAQS by July 20, 2018 (2017 attainment year) (CARB 2016b). Despite substantial air quality improvements, the region did not attain the 2008 ozone NAAQS (75 ppb) by the attainment deadline; as a result, EPA reclassified San Diego County as a severe nonattainment area for that standard with a new attainment date of July 20, 2027 (2026 attainment year).

2020 SIP

The 2020 Plan for Attaining the National Ozone Standards (2020 SIP) addresses the requirements for attaining the 2008 and 2015 8-hour ozone NAAQS. The 2020 SIP complies with the severe nonattainment area classification planning requirements and includes demonstrations for attainment of the 2008 and 2015 ozone NAAQS by 2026 and 2032, respectively. The 2020 SIP includes updated inventories of ozone precursor emissions (VOC and NO_X) for the 2017 base year (the year from which future-year inventories are projected) and the 2026 and 2032 attainment years (SDAPCD 2020).

Section 2.1 of the 2020 SIP identifies emission budgets for transportation conformity, and Section 3.1.2 of the 2020 SIP identifies emission budgets for transportation conformity. The conformity budgets for ozone precursors NO_X and VOC were developed in consultation with SANDAG, SDAPCD, CARB, and EPA based on vehicle miles travel (VMT) data provided by SANDAG.

Air Quality and Land Use Handbook (2005) and Technical Advisory (2017)

CARB prepared a guidance document that includes recommendations for siting of sensitive receptors in proximity of emission sources. The Air Quality and Land Use Handbook: A Community Health Perspective (Land Use Handbook) provides guidance to the public and decision-makers to provide information on the siting of “sensitive land uses” near specific sources of air pollution (CARB 2005); namely:

- high traffic freeways and roads,
- distribution centers,
- rail yards,
- ports,
- refineries,
- chrome plating facilities,

- dry cleaners, and
- large gas dispensing facilities.

The recommendations are provided in Table 4.3-5. The Land Use Handbook includes various limitations, and notes that the recommendations are advisory and that land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

CARB supplemented the Land Use Handbook in April 2017 to provide local planners and stakeholders with information regarding reducing exposure to traffic emissions near high-volume roadways in order to protect public health and promote equity and environmental justice. The Technical Advisory: Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways (Technical Advisory) includes various strategies to reduce pollution exposure through practices and technologies to reduce traffic emissions, increase dispersion of traffic pollution (or the dilution of pollution in the air), or remove pollution from the air (CARB 2017).

The Technical Advisory includes seven effective strategies, divided into the following three general categories (CARB 2017).

Strategies that Reduce Traffic Emissions

1. Speed reduction mechanisms including roundabouts
2. Traffic signal management
3. Speed limit reductions on high-speed roadways (>55 miles per hour [mph])

Strategies that Reduce the Concentration of Traffic Pollution

1. Urban design that promotes air flow and reduces the concentration of pollution along street corridors
2. Solid barriers such as sound walls
3. Vegetation that reduces the concentration of pollution

Strategies that Remove Pollution from Indoor Air

1. Indoor high efficiency filtration that removes pollution from the air

Senate Bill (SB) 656 (Health and Safety Code Section 39614)

Senate Bill (SB) 656 (Health and Safety Code Section 39614) of 2003 required CARB, in consultation with local 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 PM_{10} and $PM_{2.5}$ (collectively referred to as PM). Measures adopted as part of SB 656 complement and support those required for federal $PM_{2.5}$ attainment plans, as well as for state ozone plans. This will ensure continuing focus on PM reduction and progress toward attaining California's more health protective standards. The 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 for adoption as part of CARB's Diesel Risk Reduction Plan (discussed above).

Public Resources Code Section 21151.8

State law (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 siting of schools is also regulated in the California Code of Regulations. According to 5 CCR Section 14010(e): "The site shall not be adjacent to a road or freeway that any site-related traffic and sound level studies have determined will have safety problems or sound levels which adversely affect the educational program."

Air Toxics Control Measures (Health and Safety Code Division 26)

Under 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. As such, CARB has promulgated several mobile and stationary source airborne toxic control measures that identify specific measures designed to reduce emissions and therefore the exposure of individuals to TACs emitted from a variety of sources.

Specifically, CARB has adopted regulations governing diesel emissions from compression-ignition engines (17 CCR Section 93115 et seq.), portable engines (17 CCR Section 93116 et seq.), and locomotives and marine vessels (17 CCR Sections 93117, 93118 et seq., and 93119; and 13 CCR section 2299 et seq.), and emissions from offroad engines, including construction equipment, cargo handling equipment, and recreational vehicles (13 CCR Section 2400 et seq.).

Assembly Bill 617 of 2017

AB 617, signed into law in 2017, established the Community Air Protection Program (CAPP), which requires new community-focused and community-driven action to reduce air pollution and improve public health in communities that experience disproportionate burdens from exposure to air pollutants. Developed in collaboration with local stakeholders, the CAPP includes two key guiding documents: the Community Emissions Reduction Program (CERP) and the Community Air Monitoring Plan (CAMP). The CERP sets community goals to reduce air pollution emissions and identifies strategies to help achieve emission reduction goals. The CAMP broadly outlines how and where pollution data will be gathered and shared (SDAPCD n.d.).

Communities identified for monitoring include the Portside Community, which includes the neighborhoods of Barrio Logan, Logan Heights, and Sherman Heights in the City of San Diego, and West National City within National City, and the International Border Communities of San Ysidro and Otay Mesa (collectively, "Border Communities"). The Portside Community was selected by CARB for an air pollution monitoring program in 2018 and for an emissions reduction program in 2019. The Border Communities were selected to participate in the CAPP in February 2022. The CERPs for each of these communities are summarized below under "Local Laws, Regulations, Plans, and Policies." The SDAPCD administers funds to projects identified by local stakeholders have approved of, including zero-emission school buses/tugboats/off-road equipment, on-road heavy duty vehicle replacements, agricultural tractor replacements, upgraded marine vessels, and zero-emission infrastructure (SDAPCD 2022).

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

San Diego Air Pollution Control District Rules and Regulations

While CARB is responsible for the regulation of mobile emission sources within the state, local air quality management districts and air pollution control districts are responsible for enforcing standards and regulating stationary sources. The Plan area is located within the SDAB and is subject to the guidelines and regulations of SDAPCD. SDAPCD is responsible for planning, implementing, and enforcing federal and state ambient standards in the SDAB. The following rules and regulations apply to all sources in the jurisdiction of SDAPCD:

- **Regulation 2, Rule 20.2—New Source Review Non-Major Stationary Sources:** establishes Air Quality Impact Analysis (AQIA) Trigger Levels, which set emission limits for non-major new or modified stationary sources.
- **Regulation 2, Rule 20.3—New Source Review Major Stationary Sources and Prevention of Significant Deterioration Stationary Sources**: establishes AQIA Trigger Levels, which set emission limits for major new or modified stationary sources or Prevention of Significant Deterioration stationary sources. Major sources are defined in Regulation 8 as sources that emit 100 tons per year of PM_{10}, SO_X, CO, and lead; and 50 tons per year of NO_X and volatile organic compounds (VOC) in federal ozone nonattainment areas.

- **Rule 50—Visible Emissions:** establishes limits for the opacity of emissions within the SDAPCD. The proposed project is subject to Rule 50(d)(1) and (6) and should not exceed the visible emission limitation.
- **Rule 51—Nuisance:** prohibits emissions that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; endanger the comfort, repose, health, or safety of any such persons or the public; or cause injury or damage to business or property.
- **Rule 52—Particulate Matter:** establishes limits for the discharge of any particulate matter from nonstationary sources.
- **Rule 54—Dust and Fumes:** establishes limits for the amount of dust or fume discharged into the atmosphere in any 1 hour.
- **Rule 55—Fugitive Dust Control:** sets restrictions on visible fugitive dust from construction and demolition projects.
- **Rule 67—Architectural Coatings:** establishes limits to the VOC content for coatings applied within the SDAPCD.
- **Rule 67.7—Cutback and Emulsified Asphalts:** establishes general provisions and limits to the VOC content for asphalt materials applied within the SDAPCD.
- **Regulation 8, Rules 1200–1210:** establishes rules and procedures governing new, relocated, or modified emission units that may increase emissions of one or more TAC. While the project is not necessarily subject to the requirements of this regulation, the risk assessment guidelines and procedures published as part of this regulation are used in the health risk assessment herein.

Air Toxics “Hot Spots” Program

The SDAPCD implements CARB’s Air Toxics “Hot Spots” Program locally. The program requires facilities emitting toxic substances to quantify emissions, identify impacted areas, notify individuals exposed to elevated risks, and then develop and implement strategies to reduce potential significant risks. SDAPCD produces an annual report, which summarizes the latest results regarding emission estimates, the results of local Health Risk Assessments (HRAs), and the current status of public notifications and risk reduction requirements. The latest report is for the year 2023 (SDAPCD 2024b). Approximately 3,000 facilities within the county are required to comply with the program.

San Diego Regional Air Quality Strategy and State Implementation Plan

CARB, SDAPCD, and the San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB (CAA Section 176(c) (42 USC Section 7410)). The San Diego Regional Air Quality Strategy (RAQS) outlines SDAPCD’s plans and control measures designed to attain and maintain the state standards, while San Diego’s portions of the SIP are designed to attain and maintain federal standards. The RAQS was initially adopted in 1991 and is updated on a triennial basis. The RAQS was updated in 1995, 1998, 2001, 2004, 2009, 2016, and 2022. On March 9, 2023, SDAPCD adopted the revised 2022 RAQS for San Diego County (SDAPCD 2022, SDAPCD 2023). The RAQS plan demonstrates how the San Diego region will further reduce air pollution emissions to meet state health-based standards for ground-level ozone. The 2022 RAQS guides the SDAPCD in deploying tools, strategies, and resources to continue reducing pollutants that are precursors to ground-level ozone, including NOx and VOC. The 2022 RAQS emphasizes ozone control measures but also identifies complementary measures and strategies that can reduce emissions of GHGs and PM. The RAQS also includes new analyses exploring ozone and its relationship to public health, mobile sources, under-resourced communities, and GHGs and climate change. There are six federally approved TCMs in the RAQS that must be implemented in the San Diego region, which the SIP refers to as transportation tactics. These TCMs include ridesharing, transit improvements, traffic flow improvements, and bicycle facilities and programs. The TCMs have been fully implemented. Four of these TCMs–ridesharing, transit, bicycling, and traffic flow improvements continue to be funded. Furthermore, the 2022 RAQS identifies strategies to expand SDAPCD regional partnerships, identifies more opportunities to engage the public and communities of concern, and integrates environmental justice and equity across all proposed measures and strategies (SDAPCD 2022).

The RAQS does not directly address the state air quality standards for PM10 or PM2.5, although some RAQS strategies indirectly result in reductions of PM_{10} and $PM_{2.5}$. SDAPCD has also developed the SDAB's input to the SIP, which is required under the federal CAA for areas that are out of attainment of air quality standards. The SIP is also updated on a triennial basis. The 2020 Plan for Attaining the National Ozone Standards (2020 SIP) addresses the requirements for attaining the 2008 and 2015 8-hour ozone NAAQS. Both the RAQS and SIP demonstrate the effectiveness of CARB measures (mainly for mobile sources) and SDAPCD's plans and control measures (mainly for stationary and area-wide sources) for attaining the ozone NAAQS. SDAPCD and CARB adopted the 2020 SIP and as well as the Reasonable Available Control Technology Demonstration for the 2008 and 2015 8-hour ozone NAAQS on November 19, 2020 (CARB 2020b). The modeling for the conformity budgets in the 2020 SIP indicates that by 2026, on-road motor vehicle NOx and VOC emissions in the San Diego region are projected to decrease 54 percent relative to 2017 levels (SDAPCD 2020). In addition, the Measures to Reduce Particulate Matter in San Diego County report (SDAPCD 2005) proposes measures to reduce PM emissions and recommends measures for further detailed evaluation and, if appropriate, future rule development (or non-regulatory development, if applicable), adoption, and implementation in San Diego County, in order to attain PM CAAQS.

4.3.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts in the form of Initial Study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions in CEQA Guidelines Appendix G. According to Appendix G of the CEQA Guidelines, an impact on air quality is considered significant if implementation of the proposed Plan would do any of the following:

- 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.

In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR, and the unique characteristics of the proposed Plan.

Checklist questions for air quality are provided in Section III of Appendix G. To better focus the potential impacts associated with the proposed Plan, the Appendix G questions have been combined and modified. Specifically, air quality criterion (c) has been expanded to three items herein to better focus the potential impacts of similar criterion ("substantial pollutant concentrations") that require different modeling and result in varying degrees of health outcomes. Specifically, substantial pollutant concentrations of PM_{10} and $PM_{2.5}$ are included in Impact AQ-4, substantial pollutant concentrations of TACs are included in Impact AQ-5, and substantial pollutant concentrations of CO hotspots are included in Impact AQ-6. The other air quality checklist items (a, b, and d) have been revised to focus the impact determination on actual impacts associated with the proposed Plan.

Therefore, implementation of the proposed Plan would have a significant air quality impact if it would:

AQ-1 Conflict with or obstruct implementation of the Regional Air Quality Strategy, the State Implementation Plan, and/or the Community Emissions Reduction Plan

AQ-2 Result in an operations-related cumulatively considerable net increase in nonattainment or attainment criteria pollutants, including VOC, NO_X, PM_{10}, $PM_{2.5}$, and SO_X

AQ-3 Result in construction-related emissions above regional mass emission thresholds

AQ-4 Expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations

AQ-5 Expose sensitive receptors to substantial TAC concentrations

AQ-6 Expose sensitive receptors to carbon monoxide hot spots

AQ-7 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

4.3.4 Environmental Impacts and Mitigation Measures

AQ-1 CONFLICT WITH OR OBSTRUCT IMPLEMENTATION OF THE REGIONAL AIR QUALITY STRATEGY, STATE IMPLEMENTATION PLAN, AND/OR COMMUNITY EMISSIONS REDUCTION PLANS

Analysis Methodology

The SDAB is currently designated as a severe nonattainment area for both the 2008 8-hour ozone and the 2015 8-hour ozone NAAQS. The SDAB is also classified as a nonattainment area with respect to the 1-hour ozone, 8-hour ozone, $PM_{2.5}$, and PM_{10} CAAQS. Therefore, the SDAPCD is required to prepare and submit to the EPA, through CARB, a plan that identifies control measures and associated emission reductions as necessary to demonstrate attainment of the NAAQS, and to prepare and submit to CARB a plan to attain the CAAQS. The applicable air quality attainment plans include the 2020 SIP and the 2022 RAQS. While the SDAB is designated as a nonattainment area for the PM_{10} and $PM_{2.5}$ CAAQS, the CCAA does not require the preparation of attainment plans for these pollutants, and no such plans have been prepared.

<u>Regional Growth and Land Use Change</u>

The analysis evaluates whether forecasted regional growth and land use change(s) under the proposed Plan would conflict with or obstruct implementation of programs and rules and regulations adopted as part of the RAQS and SIP. The growth forecast used in the RAQS and ozone SIPs is compared to forecasted growth under the proposed Plan. In addition, the analysis describes whether forecasted regional growth and land use change would conflict with or obstruct implementation of any of the applicable control measures contained within the 2020 SIP or the 2022 RAQS.

Attachments D and E of the 2020 SIP includes a list of control measures adopted by CARB between 1985 and 2019 to reduce emissions of ozone precursors.

Transportation Network Improvements and Programs

The SANDAG transportation conformity analysis provided in Appendix C of the proposed Plan is used to determine whether implementation of planned transportation network improvements and programs would conflict with or obstruct implementation of the 2020 SIP. Modeled motor vehicle emissions resulting from implementation of the proposed Plan are compared to the emissions budgets established in the SIP. Consistency with the TCMs in the RAQS was also evaluated.

The emissions for regional conformity were calculated using CARB's on-road mobile source emission estimation model, EMFAC2017. At the time of EIR preparation, EMFAC2017 was the most appropriate methodology for to calculate conformity analysis mobile source emissions, for the reasons stated in Section 4.3.2, Regulatory Setting.

Impact Analysis

<u>2035</u>

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

The 2022 RAQS is based on the Series 14 Regional Growth Forecast found within the 2021 RTP, which forecast growth in the region (relative to 2016) of 161,338 people by the year 2025, 310,838 people by the year 2035, and 436,563 people by the year 2050. Total population was projected to be 3.7 million in 2050.

The 2020 SIP is based on a number of sources, including EMFAC2017. Growth in EMFAC2017 modeling is based on Department of Finance (DOF) forecasting and SANDAG assumptions in Series 13. The Series 13 Regional Growth Forecast and the 2015 Regional Plan forecast growth in the region (relative to 2012) of approximately 300,000 people by 2020, 700,000 people by 2035, and 925,000 people by 2050. Total population was projected to be 4.1 million in 2050 (SANDAG 2015).

The proposed Plan is based on the Series 15 Regional Growth Forecast, which aligns with DOF forecasting from January 2020 (SANDAG 2024). Growth projections included within the proposed Plan, relative to 2016, show a growth of approximately 160,000 people by the year 2025, 310,000 people by the year 2035, and 435,000 people by the year 2050. Total population is now projected to be 3.7 million in 2050, which represents an 8 percent reduction from the estimate assumed in the RAQS and a 15 percent reduction from the estimate assumed in the SIP.

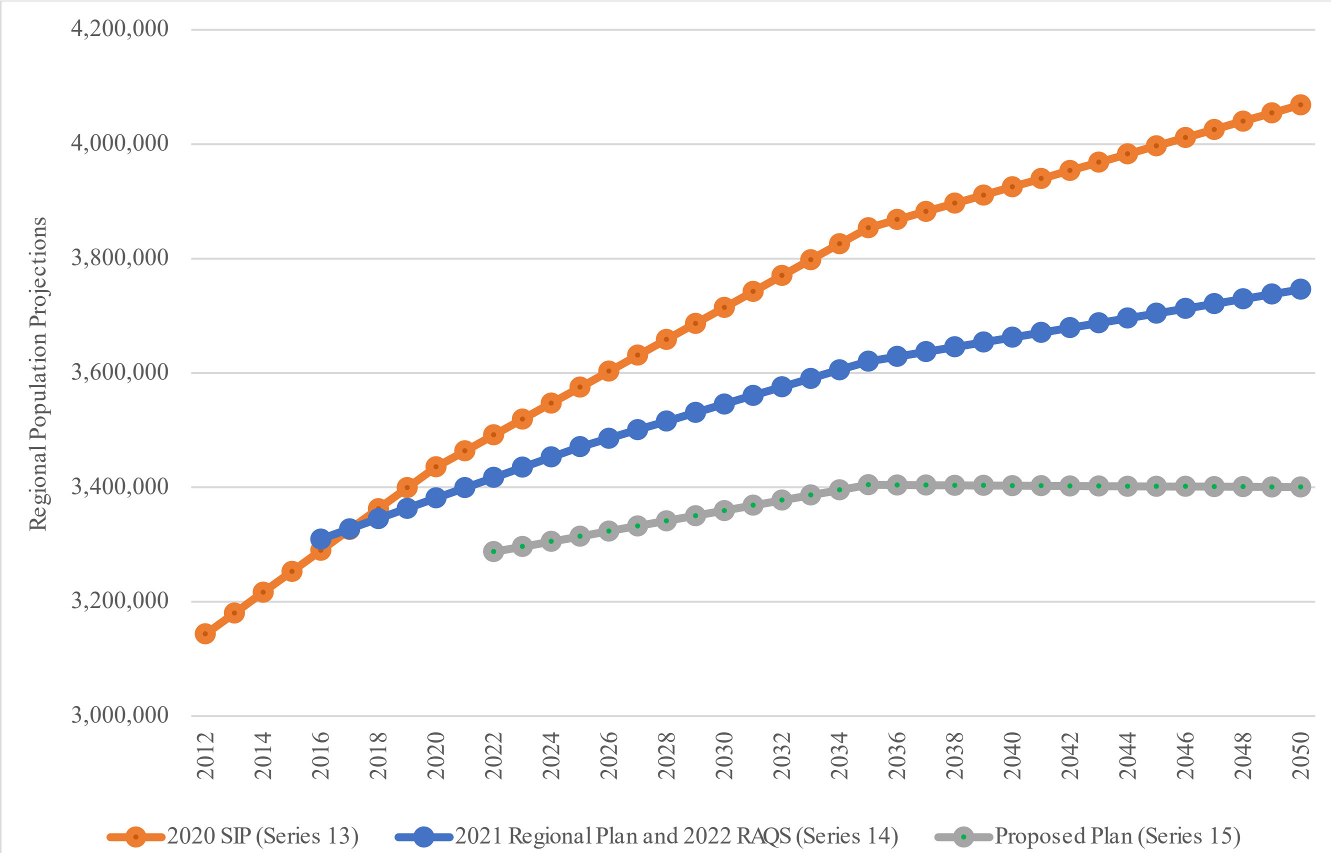
Figure 4.3-1 summarizes the growth projections assumed in Series 13 (assumed in the 2020 SIP), and Series 14 (assumed in the 2022 RAQS and the 2021 Regional Plan EIR) and Series 15 (assumed in the Proposed Plan). As shown, the projections for the proposed Plan are lower than assumed in the prior growth forecasts in 2025. Thus, because the proposed Plan's growth forecast is below that assumed in the RAQS, the proposed Plan's growth forecast does not conflict with the growth forecast in the RAQS.

Regarding consistency with regulations, applicable regulations are summarized below. The SDAPCD control measures that apply to stationary sources various measures related to area and stationary source emissions, such as control on automotive finishes, wood coatings, and controls on boilers, process heaters, generators, and turbines (SDAPCD 2025):

In addition, Attachment H of the RAQS includes a re-evaluation of all feasible stationary sources control measures that have been adopted to reduce emissions of VOCs and NOx within the region. These measures include controls on landfill flares, controls on turbines and other stationary engines, controls on furnaces, and additional controls on marine coatings. Other possible future rules considered include a rule on indirect (e.g., mobile) sources as well as possible rules to regulate emissions from large poultry operations and restaurant cooking (SDAPCD 2025). Moreover, Attachment B of the 2020 SIP includes a list of rules that are being added or supplemented as part of the submittal to EPA. These rules include controls on underground storage tanks at gasoline stations and mobile transport tanks, controls on cold solvent cleaning and stripping operations, as well as a possible future rule related to landfill gas (SDAPCD 2020).

SDAPCD rules are implemented primarily through SDAPCD permitting processes that are specific to each facility or operation. These measures were adopted as part of the RAQS and SIP to reduce emissions that contribute to ozone formation. SDAPCD and CARB have adopted various strategies within the RAQS and SIP as enforceable requirements, and regional growth and land use changes associated with the proposed Plan are subject to the applicable regulations.

As noted, forecasted growth for each forecast year is less than that assumed in the RAQS and SIP, Land use changes in 2025 under the proposed Plan would be subject to and implement the above regulations, and therefore would not conflict with or obstruct implementation of the RAQS or the SIP. Therefore, regional growth and land use change would not conflict with or obstruct implementation of the applicable air quality plans in 2035. This impact is less than significant.



Source: SDAPCD 2020, SDAPCD 2022, SANDAG 2025.

Figure 4.3-1 Comparison of Regional Population Projections

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line.

Modeled emissions from the transportation conformity analysis are summarized in Table 4.3-5. As shown, ozone precursors ROG and NOx in 2035 are less than the conformity budget emissions for both ROG and NOx in the 2020 SIP. Thus, the transportation network improvements and programs of the proposed Plan would not generate emissions greater than anticipated by relevant federal and state air quality attainment plans.

Table 4.3-5 Air Quality Conformity Emissions (tons per day)

Year	ROG		NOx	
	SIP Budget	Proposed Plan	SIP Budget	Proposed Plan
2026	12.1	10.8	17.3	15.6
2029	11.0	9.7	15.9	13.0
2032	10.0	8.5	15.1	11.1
2035	*10.0*	*7.8*	*15.1*	*10.1*
2040	10.0	6.7	15.1	8.5
2050	10.0	6.0	15.1	7.5

Source: Appendix C

Note: Conformity years for the 2020 SIP (2026, 2029, 2032, 2040, 2050) do not align perfectly with the analysis years for the proposed Plan (2022, 2035, 2050). SIP budgets and emission estimates for the missing year (2035) were estimated by linearly interpolating between the previous (2032) and next (2040) conformity years. Interpolated numbers are shown *in italics*.

There are six federally approved TCMs in the RAQS that must be implemented in the San Diego region, which the SIP refers to as transportation tactics. The TCMs have been fully implemented. Four of these TCMs – ridesharing, transit, bicycling, and traffic flow improvements – continue to be funded, and the level of implementation established in the SIP has been surpassed. Implementation continues for these six TCMs, and emission reductions from these measures are expected to continue over the next three years as funding remains available (SDAPCD 2022).

Transit Improvement and Expansion Program. The RAQS identifies replacing diesel-fueled buses with Compressed Natural Gas buses, increasing bus travel, and increasing rail transit services. The entire Metropolitan Transit System (MTS) fleet of 40- and 60-foot buses uses Renewable Compressed Natural Gas, and MTS recently adopted a plan to transition the entire fleet to zero-emission vehicles by 2040. MTS currently has 25 electric buses in service (MTS 2025).

The proposed Plan includes transit improvements that make public transit a compelling option to driving—fast, convenient, and safe. Improvements include regional rail; light rail; streetcar; a variety of bus options, including Rapid, express, local, local circulator, rural; and an Airport Transit Connection.

Next Generation Rapid is a bus network using special technology and infrastructure to get around traffic. All of the Rapid routes included in the proposed Plan are planned to start by 2035. Regional rail in the proposed Plan includes significantly upgraded rail service with higher-speed trains that are fast and convenient, especially for longer trips. Light rail transit (LRT) includes improvements to existing light rail services and new light rail or streetcar routes. Many of the existing bus and rail services will have increases to their frequencies.

Flexible Fleets are on-demand, shared services that provide different mobility options and vehicles for all types of trips, reducing the need to own a car. Flexible Fleets in the proposed Plan can provide first- and last-mile connections to transit and major destinations, including microtransit and neighborhood electric vehicle (NEV) options.

Through 2035, major transit improvements include the Airport Connection, numerous Rapid bus routes, and various microtransit and NEV projects. As discussed in Section 4.16, the proposed Plan would provide an additional 220,000 miles of transit service and increase transit mode share approximately 1.8 percent while reducing vehicular mode share approximately 3 percent over 2022 levels.

Vanpools. SANDAG would continue to operate its Regional Vanpool Program, providing increased access to carpooling. The programs currently 395 active vanpools, which helped almost 26,000 people commute in 2023 (see Section 4.16).

High Occupancy Vehicle (HOV) Lanes. Managed Lanes (MLs), such as those along the Interstate (I-) 15 corridor, offer priority access to people using transit, carpooling, or vanpooling along with emergency vehicles and low-emission vehicles with appropriate decals. MLs are expanded to all urban and interregional highway corridors in the region. Existing infrastructure is maximized by repurposing shoulders or existing travel lanes to create MLs where shoulders, high-occupancy vehicle travel lanes, or general-purpose travel lanes exist today. There are various ML projects proposed through 2035. As discussed in Section 4.16, the proposed Plan would increase ML lane miles by 166 miles by 2035.

Park-and-Ride Facilities. The proposed Plan supports the use of carpooling and transit park-and-ride facilities to provide access to alternative modes of transportation and is consistent with this TCM. SANDAG iCommute maintains a park-and-ride webpage. There are no specific park-and-ride lots proposed.

Bicycle Facilities. Projects in the proposed Plan would improve or expand bicycle and pedestrian interconnections between neighborhoods and communities that are currently separated by major transportation corridors. Additionally, projects that support the proposed Plan's Active Transportation improvements reflect the adopted Regional Bike Network and include both on- and off-street improvements to create a safe and comfortable space for people to walk, bike, and ride micromobility options. The proposed Plan includes various bicycle facility projects, and the Plan proposes increasing bike facility lane miles by 2035 by 187 miles (10 percent) and increasing daily bicycle trips by 1,376 trips (1 percent) (see Appendix K to the 2025 Regional Plan).

Traffic Signal Improvements. The proposed Plan also includes transportation technology and Smart Intersection Systems (SIS), which use technology and data to reduce congestion and improve roadway safety. transportation technology can include a wide range of elements, such as traffic signal upgrades, ramp metering, changeable message signs, queue warning systems, and freeway fiber communications. Traffic signal improvements do not reduce VMT but they do reduce intersection delay.

2035 Conclusion

Implementation of the proposed Plan would result in a less-than-significant impact related to conflict with or obstruction of implementation of the applicable air quality plans because regional growth and land use change would be consistent with the SIP growth forecasts, and applicable rules, regulations, and programs adopted as part of the plans by the SDAPCD and CARB. Implementation of the transportation network improvements and programs would also be consistent with the applicable air quality plans because the emissions are less than the conformity emissions budget for ROG and NOx. Also, the transportation network improvements and programs are consistent with the TCMs contained within the SIP and the RAQS. Therefore, this impact (AQ-1) is less than significant in 2035.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050.

Figure 4.3-1 summarizes the growth projections assumed in Series 13 (assumed in the 2020 SIP), Series 14 (assumed in the 2022 RAQS and the 2021 Regional Plan EIR), and Series 15 (assumed in the Proposed Plan). As shown, the projections for the proposed Plan are lower than assumed in the prior growth forecasts in 2050.

The RAQS and SIP were adopted to reduce emissions that contribute to ozone formation. SDAPCD and CARB have adopted various strategies within the RAQS and SIP as enforceable requirements, and regional growth and land use changes associated with the proposed Plan are subject to the applicable regulations. As noted, forecasted growth for each forecast year is less than that assumed in the RAQS and SIP. Forecasted regional growth and land use change in 2050 under the proposed Plan would be subject to and implement the regulations described in the 2035 analysis above and therefore would not conflict with or obstruct implementation of the RAQS or the SIP.

Therefore, regional growth and land use change would not conflict with or obstruct implementation of the applicable air quality plans. This impact is less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Modeled emissions from the transportation conformity analysis are summarized in Table 4.3-5. As shown, ozone precursors ROG and NOX in 2050 are less than the conformity budget emissions for both ROG and NOX. Thus, the transportation network improvements and programs of the proposed Plan would not generate emissions greater than those forecasted by relevant federal and state air quality attainment plans. The same RAQS TCMs discussed above under 2035 are applicable to the 2050 time horizon. A discussion demonstrating the proposed Plan's consistency with the six TCMs by 2050 is provided below.

Transit Improvement and Expansion Program. By 2050, transit improvements include improvements to the light rail system, improvements to the regional rail system, with new stations and track improvements, and new streetcar systems. As discussed in Section 4.16, the proposed Plan would provide an additional 226,000 miles of transit service and increase transit mode share by approximately 2.0 percent while reducing vehicular mode share by approximately 5.6 percent over 2022 levels.

Vanpools. SANDAG would continue to operate its Regional Vanpool Program, providing increased access to carpooling. The programs currently 395 active vanpools, which helped almost 26,000 people commute in 2023 (see Section 4.16).

High Occupancy Vehicle (HOV) Lanes. Managed Lanes (MLs), such as those along the Interstate (I-) 15 corridor, offer priority access to people using transit, carpooling, or vanpooling along with emergency vehicles and low-emission vehicles with appropriate decals. MLs are expanded to all urban and interregional highway corridors in the region. Existing infrastructure is maximized by repurposing shoulders or existing travel lanes to create MLs where shoulders, high-occupancy vehicle travel lanes, or general-purpose travel lanes exist today. Most of the ML projects are proposed through the 2035 timeframe, although some, such as MLs for SR-56, are proposed beyond 2035. As discussed in Section 4.16, the proposed Plan would increase ML miles by 334 by 2050.

Park-and-Ride Facilities. The proposed Plan supports the use of carpooling and transit park-and-ride facilities to provide access to alternative modes of transportation and is consistent with this TCM. SANDAG iCommute maintains a park-and-ride webpage. There are no specific park-and-ride lots proposed.

Bicycle Facilities. Projects in the proposed Plan would improve or expand bicycle and pedestrian interconnections between neighborhoods and communities that are currently separated by major transportation corridors. Additionally, projects that support the proposed Plan's Active Transportation improvements reflect the adopted Regional Bike Network and include both on- and off-street improvements to create a safe and comfortable space for people to walk, bike, and ride micromobility options. The proposed Plan includes various bicycle facility projects, and the Plan proposes increasing miles of bike facilities by 2050 1,843 miles (106 percent) and increasing daily bicycle trips by 35,541 (17 percent) relative to 2022.

Traffic Signal Improvements. The proposed Plan also includes transportation technology and Smart Intersection Systems (SIS), which use technology and data to reduce congestion and improve roadway safety. transportation technology can include a wide range of elements, such as traffic signal upgrades, ramp metering, changeable message signs, queue warning systems, and freeway fiber communications. Traffic signal improvements do not reduce VMT but they do reduce intersection delay.

2050 Conclusion

Implementation of the proposed Plan would result in a less-than-significant impact related to conflict with or obstruction of implementation of the applicable air quality plans because regional growth and land use change would be consistent with the SIP growth forecasts, and applicable rules, regulations, and programs adopted as part of the plans by the SDAPCD and CARB. Implementation of the transportation network improvements and programs would also be consistent with the applicable air quality plans because the emissions are less than the conformity emissions budget for ROG and NOx. Also, the transportation network improvements and programs are consistent with the TCMs contained within the SIP and the RAQS. Therefore, this impact (AQ-1) is less than significant in 2050.

Impacts of the Proposed Plan with Future Climate Change

Growth and land use change and transportation network improvements in the region, with future climate change, would continue not to conflict with or obstruct implementation of the regional air quality plans.

MITIGATION MEASURES

No mitigation measures are required for this impact.

AQ-2 RESULT IN AN OPERATIONS-RELATED CUMULATIVELY CONSIDERABLE NET INCREASE IN NONATTAINMENT OR ATTAINMENT CRITERIA POLLUTANT, INCLUDING VOC, NO_X, PM_{10}, $PM_{2.5}$, AND SO_X

Analysis Methodology

This analysis focuses on the criteria pollutants for which the region is classified as nonattainment: NOx and VOC (precursors to ozone) and $PM_{2.5}$ and PM_{10}. Emissions are also projected for criteria pollutants for which the region is in attainment: CO and SOx. Lead is not evaluated herein because lead is no longer a component in gasoline.

Future operational emissions of ozone precursors (VOC and NO_X), PM_{10}, $PM_{2.5}$, CO, and SO_X associated with the implementation of the proposed Plan are identified. Future emissions under the proposed Plan are then compared to 2022 levels. Criteria pollutant emissions were quantified using the methodologies described in detail in Appendix C. Pollutant emissions that show no change or decrease under the proposed Plan would not contribute to a cumulative increase in emissions and therefore are not addressed further in the analysis. Where operational pollutant emissions increase under the proposed Plan, the analysis considers whether the increase is cumulatively considerable. Any incremental increase in pollutant emissions associated with the proposed Plan exceeding County of San Diego screening-level thresholds (SLTs) described below is considered cumulatively considerable; this represents a conservative analysis approach. Cumulative emissions from all sources in the region are reported from the CARB emissions inventory for 2022, 2035, and 2050. Please note that construction emissions are addressed separately under Impact AQ-3.

Appendix G provides that, "[w]here available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the [above] determinations." Here, SDAPCD does not provide CEQA significance thresholds for any air pollutant source it does not directly regulate. SDAPCD regulates emissions from stationary sources and not mobile sources under SDAPCD Regulation II, Rule 20.2, Table 20.2-1, Air Quality Impact Analysis (AQIA) Trigger Levels.

Because SDAPCD does not prescribe CEQA significance thresholds, air quality impacts of the proposed Plan were evaluated based on SLTs within the County of San Diego's Guidelines for Determining Significance: Air Quality. These SLTs are based on the AQIA Trigger Levels in SDAPCD Regulation II, Rule 20.2. For CEQA purposes, these SLTs can be used to determine if a project's total emissions (e.g., stationary and fugitive emissions, as well as emissions from mobile sources) would result in a significant impact to air quality. The daily SLTs are most appropriately used for the standard construction and operational emissions that would be anticipated under the proposed Plan. The SLTs screening-level thresholds are shown in Table 5 of the County's *Guidelines for Determining Significance – Air Quality* (County of San Diego 2007). The County's Guidelines typically inform environmental reviews for development projects in the County and are used to help determine the significance of impacts. The SLTs are summarized in Table 4.3-6.

Pursuant to the County Guidelines, construction impacts predominantly result from two sources: fugitive dust from surface disturbance activities; and exhaust emissions resulting from the use of construction equipment (including, but not limited to: graders, dozers, backhoes, haul trucks, stationary electricity generators, and construction worker vehicles). One of the pollutants of concern during construction is particulate matter, because PM_{10} is emitted as windblown (fugitive) dust during surface disturbance, and as exhaust of diesel-fired construction equipment (particularly as $PM_{2.5}$). The proposed Plan's construction emissions are evaluated in Impact AQ-3.

On-road emissions were estimated based on emission factors from EMFAC2021, which accounted for the average fleet mix operating in San Diego County, fugitive road dust, and PM_{10} and $PM_{2.5}$ emission factors using the CARB methodology for estimating emissions from road dust. Activity data from SANDAG's activity-based model were also utilized for each analysis year. At the time of EIR preparation, EMFAC2021 was the most appropriate methodology for the EIR to use to calculate Impact AQ-2 mobile source emissions, for the reasons stated in Section 4.3.2, Regulatory Setting. Freight rail emissions were estimated based on CARB's freight emissions model in EMFAC2021 for each analysis year, along with cargo volume forecasts from the U.S. Bureau of Transportation Statistics. Passenger rail emissions were estimated based on rail activity for existing services (e.g., Amtrak, Sprinter, and Coaster), proposed new rail lines, and locomotive fleet turnover for each analysis year, as provided by SANDAG staff (Uchitel pers. comm.), along with EPA emission factors for locomotives.

Note that the focus of this analysis is on those emission sources that would be directly changed by the proposed Plan. The proposed Plan does not directly cause additional regional growth; instead, it envisions a pattern of regional growth and development that reflects smart growth, transit-oriented development, the preservation of natural resources and agricultural lands, and the building of communities that are resilient to the effects of climate change. Other sources of emissions associated with land use development — such as stationary sources (electric utilities, cogeneration, fuel combustion for food and agricultural processing, fuel combustion for service and commercial uses, sewage treatment, landfills, and dry cleaning) and area sources (consumer products use, architectural coatings, pesticides and fertilizers, residential fuel combustion, and cooking) — are therefore not included in the emissions estimates.

Health Impacts

As discussed in Section 4.3.1, all criteria pollutants that would be generated by the proposed project are associated with some form of health risk (e.g., asthma, lower respiratory problems). Criteria pollutants can be classified as either regional or localized pollutants, each with distinct health effects. Regional pollutants can be transported over long distances and affect ambient air quality far from the emissions source. Localized pollutants affect ambient air quality near the emissions source. Ozone is considered a regional criteria pollutant, whereas CO, NO_2, and Pb are localized pollutants. Both SO_X, and PM can be both a local and regional pollutants, depending on their composition.

Regional Project-Generated Criteria Pollutants (Ozone Precursors, Regional SO_X, and Regional PM)

Adverse health effects induced by regional criteria pollutant emissions generated by the proposed Plan (ozone precursors, SO_X and PM) are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). For these reasons, ozone precursors (ROG and NO_X) contribute to the formation of ground-borne ozone on a regional scale. Emissions of ROG and NO_X generated in one area may not equate to a specific ozone concentration in that same area. Similarly, some types of particulate matter and SO_X pollution may be transported over long distances or formed through atmospheric reactions. As such, the magnitude and locations of specific health effects from exposure to increased ozone, SO_X, or regional PM concentrations are the product of emissions generated by numerous sources throughout a region, as opposed to a single individual project. Moreover, exposure to regional air pollution does not guarantee that an individual will experience an adverse health effect—as discussed above, there are large individual differences in the intensity of symptomatic responses to a specific air pollutant. However, other variables, including the overall health of individuals and underlying medical conditions that cannot be known, strongly influence individual health consequences.

Nonetheless, emissions increases under the proposed Plan, were they to occur, could increase photochemical reactions and the formation of tropospheric ozone, SO_X, and secondary PM, which, at certain concentrations, could lead to increased incidence of specific health consequences, such as various respiratory and cardiovascular ailments, which for the reasons stated above cannot meaningfully be quantified. As discussed previously, air districts develop region-specific CEQA thresholds of significance in consideration of existing air quality concentrations and attainment designations under the NAAQS and CAAQS. The NAAQS and CAAQS are informed by a wide range of scientific evidence that demonstrates there are known safe concentrations of criteria pollutants. Thus, NAAQS and CAAQS are health-based standards.

Localized Project-Generated Criteria Pollutants and Air Toxics)

Localized pollutants generated by a project are deposited and potentially affect populations near the emissions source. Because these pollutants dissipate with distance, emissions from individual projects can result in greater direct health impacts on adjacent sensitive receptors. Localized pollutants include localized PM and TACs. The localized PM analysis is provided in Impact AQ-4. In Impact AQ-4, if the proposed Plan would contribute to an existing violation or create a new air quality standard violation, it would also contribute to these adverse health effects. Health impacts of TACs are analyzed separately in Impact AQ-5.

Impact Analysis

2035

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Forecasted regional growth and land use change and transportation network improvements and programs by 2035 would generate air pollutant emissions directly and indirectly during operation of development and the transportation network. As shown in Table 4.3-6, emissions would decrease from 2022 to 2035 under implementation of the proposed Plan for certain emissions as follows:

- ROG reduced by 13,089 pounds per day, or 43 percent
- NOx reduced by 20,860 pounds per day, or 45 percent
- CO reduced by 112,156 pounds per day, or 43 percent
- $PM_{2.5}$ reduced by 144 pounds per day, or 2 percent
- SOx reduced by 80 pounds per day, or 11 percent

As shown in Table 4.3-7, emissions would increase from 2022 to 2035 under implementation of the proposed Plan for the following:

- PM_{10} increased by 147 pounds per day, or 0.4 percent

This change in PM_{10} emissions is due to changes in emissions from on-road (140 pounds per day increase), freight rail (6 pounds per day), and passenger rail (2 pounds per day). Within the on-road category, this increase is the direct result of an increase in re-entrained PM_{10} road dust (422 pounds per day increase) that overwhelms the decrease in motor vehicle PM_{10} exhaust (283 pounds per day decrease). The end result is an increase in PM_{10} emissions (147 pounds per day increase) that exceeds the daily PM_{10} threshold (100 pounds per day).

Note that in terms of activity, VMT, freight rail, and passenger rail activity are projected to increase between 2022 and 2035. Reductions in emissions across the board are primarily due to federal and state regulations that gradually reduce emissions from vehicles and locomotives. Moreover, as passenger rail activity increases, rail lines, such as Coaster and Amtrak, primarily operate a modern, Tier 4 engine fleet, and this will continue through 2035. Metrolink also plans to replace 20 Tier 2 locomotives with Tier 4 locomotives by 2035, at which point all passenger rail engines in the county will be powered by Tier 4 engines. Moreover, passenger rail activity is expected to double by 2035, as daily train trips for each provider (Amtrak, Metrolink, Coaster, and Sprinter) are expected to increase from 142 trips per day in total to 280 trips per day in 2035. This increase in passenger rail activity will increase emissions from the passenger rail category.

For on-road sources, the average vehicle fleet in 2035 is assumed to be substantially cleaner than the existing fleet. Therefore, while total VMT would increase approximately 4 percent, emissions of all pollutants decrease except for PM_{10}, and the increase in PM_{10} (0.4 percent) is much lower than the increase in VMT (4 percent). This is because newer vehicles emit less emissions on a per mile basis. It is worth noting that the increase in PM_{10} is due to the re-entrained paved road dust, and emission rates for paved road dust do not follow the same downward trend as vehicle exhaust. Therefore, because VMT increases between 2022 to 2035, PM_{10} emissions are increased, but at a lower rate than the change in VMT. All other pollutants, as well as PM_{10} exhaust, are expected to be lower in 2035 than in 2022.

As shown, emissions from the proposed Plan are reduced for each criteria pollutant except PM_{10}, which is a nonattainment pollutant. The increase in PM_{10} emissions can contribute to short- and long-term human health effects described in Section 4.3-1.

Numerous studies have linked PM exposure to premature death in people with preexisting heart or lung disease. Broadly, PM contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems. However, $PM_{2.5}$ is more of a concern than PM_{10}. CARB states that $PM_{2.5}$ is more likely to travel into and deposit on the surface of the deeper parts of the lung, while the EPA states that $PM_{2.5}$ poses the greatest risk to health (CARB 2025g, EPA 2024c). As shown in Table 4.3-7 and as discussed above, while PM_{10} emissions increase slightly (0.4 percent), $PM_{2.5}$ emissions decrease (2 percent).

Table 4.3-6 Proposed Plan Emission Estimates Prior to Mitigation

Emission Category	Emissions (pounds per day)					
	ROG	NOx	CO	PM_{10}	$PM_{2.5}$	SOx
2022						
On-Road	30,726	43,746	262,664	33,711	9,077	692
Freight Rail	110	1,778	433	70	68	30
Passenger Rail	16	356	403	6	6	28
Total 2022	30,852	45,881	263,500	33,788	9,151	750
2035						
On-Road	17,637	20,718	149,506	33,851	8,926	541
Freight Rail	126	3,685	1,080	75	73	76
Passenger Rail	25	586	750	9	9	53
Total 2035	17,787	24,990	151,336	33,935	9,007	670
Net Change 2035 vs 2022	*-13,064*	*-20,891*	*-112,163*	*+147*	*-144*	*-80*
2050						
On-Road	12,990	18,357	121,821	34,030	8,935	509
Freight Rail	59	1,618	1,382	26	25	97
Passenger Rail	0	0	0	0	0	0
Total 2050	13,049	19,975	123,204	34,056	8,960	606
Net Change 2050 vs 2022	*-17,802*	*-25,906*	*-140,296*	*+268*	*-191*	*-145*
Net Change 2050 vs 2035	*-4,738*	*-5,015*	*-28,133*	*+121*	*-47*	*-64*
Thresholds	**75**	**250**	**550**	**100**	**55**	**250**

Notes: Refer to Appendix C for modeling assumptions, inputs, and results

Source for Thresholds: County of San Diego 2007.

2035 Conclusion
Implementation of the proposed Plan would result in a cumulatively considerable net increase in PM10 emissions in 2035. Therefore, this impact (AQ-1) is significant in 2035.

<u>2050</u>

Regional Growth and Land Use Change and Transportation Network Improvements and Programs
Forecasted regional growth and land use change and transportation network improvements and programs by 2050 would generate air pollutant emissions directly and indirectly during operation of development and the transportation network. As shown in Table 4.3-6, emissions would decrease from 2022 to 2050 under implementation of the proposed Plan for certain emissions as follows:

- ROG reduced by 17,798 pounds per day, or 58 percent
- NOx reduced by 25,815 pounds per day, or 56 percent
- CO reduced by 140,278 pounds per day, or 53 percent
- $PM_{2.5}$ reduced by 190 pounds per day, or 2 percent
- SOx reduced by 145 pounds per day, or 19 percent

As shown in Table 4.3-7, emissions would increase from 2022 to 2050 under implementation of the proposed Plan for the following:

- PM_{10} increased by 270 pounds per day, or 0.8 percent.

This change in PM_{10} emissions is due to changes in emissions from on-road (319 pounds per day increase), while PM_{10} emissions associated with freight rail (43 pounds per day decrease) and passenger rail (6 pounds per day decrease) would decrease. Within the on-road category, this increase is the result of an increase in in re-entrained PM_{10} road dust (662 pounds per day increase) that overwhelms the decrease in motor vehicle PM_{10} exhaust (343 pounds per day decrease). The end result is an increase in PM_{10} emissions (270 pounds per day increase) that exceeds the daily PM_{10} threshold (100 pounds per day).

Note that in terms of activity, VMT, freight rail, and passenger rail activity are projected to increase between 2022 and 2050. Reductions in emissions across the board are primarily due to federal and state regulations that gradually reduce emissions from vehicles and locomotives. Moreover, as passenger rail activity increases, all passenger rail lines in the Plan area plan to replace diesel locomotives with zero emission electric engines by 2050. Therefore, while passenger rail activity is expected to increase more than double by 2050, as daily train trips for each provider (Amtrak, Metrolink, Coaster, and Sprinter) are expected to increase from 142 trips per day in total to 360 trips per day in 2050, emissions are not expected to increase, as zero emission locomotives result in no emissions at the tailpipe.

For on-road sources, the average vehicle fleet in 2050 is assumed to be substantially cleaner than the existing fleet. Therefore, while total VMT would increase approximately 5 percent, emissions of all pollutants decrease except for PM_{10}, and the increase in PM_{10} (0.8 percent) is much lower than the increase in VMT (5 percent). This is because newer vehicles emit less emissions on a per mile basis. It is worth noting that the increase in PM_{10} is due to the re-entrained paved road dust, and emission rates for paved road dust do not follow the same downward trend as vehicle exhaust. Therefore, because VMT increases between 2022 to 2050, PM_{10} emissions are increased, but at a lower rate than the change in VMT. All other pollutants, as well as PM10 exhaust, are expected to be lower in 2050 than in 2022.

As shown, emissions from the proposed Plan are reduced for each criteria pollutant except PM_{10}, which is a nonattainment pollutant. The increase in PM_{10} emissions can contribute to short- and long-term human health effects described in Section 4.3-1.

Numerous studies have linked PM exposure to premature death in people with preexisting heart or lung disease. Broadly, PM contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems. However, $PM_{2.5}$ is more of a concern than $PM_{10.}$ CARB states that $PM_{2.5}$ is more likely to travel into and deposit on the surface of the deeper parts of the lung, while the EPA states that $PM_{2.5}$ poses the greatest risk to health (CARB 2021b, EPA 2021). As shown in Table 4.3-7 and as discussed above, while PM_{10} emissions increase slightly (0.8 percent), $PM_{2.5}$ emissions decrease (2 percent).

Additionally, as shown in Table 4.3-6, emissions would decrease from 2035 to 2050 under implementation of the proposed Plan for the following:

- ROG reduced by 4,738 pounds per day, or 15 percent
- NOx reduced by 5,015 pounds per day, or 11 percent
- CO reduced by 28,133 pounds per day, or 11 percent
- $PM_{2.5}$ reduced by 47 pounds per day, or 0.5 percent
- SOx reduced by 64 pounds per day, or 9 percent

As shown in Table 4.3-6, emissions would increase from 2035 to 2050 under implementation of the proposed Plan for the following:

- PM_{10} increased by 121 pounds per day, or 0.4 percent.

2050 Conclusion

Implementation of the proposed Plan would result in a cumulatively considerable net increase in PM_{10} emissions in 2050 compared to both 2022 baseline and 2035 emission. Therefore, this impact (AQ-1) is significant in 2050.

Impacts of the Proposed Plan with Future Climate Change

With continued climate change, growth and land use change and transportation network improvements in the region would result in increases in PM_{10}. Climate change may result in increased wildfire frequency and intensity, which can increase emissions of particulate matter. Precipitation during dry seasons may also decrease under climate change, reducing regional ability to fight wildfires and reduce this source of particulate matter (Reidmiller et al. 2018). Increased droughts would also increase dust emissions (Pu et al. 2022). The increase of PM_{10} emissions as a result of the proposed Plan's projected growth and transportation network improvements would be worsened by climate change-caused increases of these emissions.

MITIGATION MEASURES

AQ-2 RESULT IN A CUMULATIVELY CONSIDERABLE NET INCREASE IN OPERATIONS-RELATED NONATTAINMENT OR ATTAINMENT CRITERIA POLLUTANTS, INCLUDING VOC, NO_X, PM_{10}, $PM_{2.5}$, AND SO_X

2035, 2050

Implement mitigation measures GHG-4a (Allocate Grant Funding to Projects that Reduce GHG Emissions), GHG-4b (Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans), GHG-4c (Allocate Funding for Zero-Emission Vehicle Infrastructure), GHG-4d (Implement Measures to Reduce GHG Emissions from Transportation Projects, and GHG-4e (Implement Measures to Reduce GHG Emissions from Development Projects), as discussed under Impact GHG-4 in Section 4.8, "Greenhouse Gas Emissions and Climate Change". In addition, implement mitigation measure TRA-2 (Achieve Further VMT Reductions for Transportation and Development Projects), as discussed under Impact TRA-2 in Section 4.16, "Transportation".

AQ-2a. Secure Incentive Funding. SANDAG, in partnership with SDAPCD and the Port of San Diego, and member cities, will seek to secure incentive funding to reduce mobile PM emissions from mobile exhaust, and entrained PM sources such as tire wear, brake wear, and re-entrained road dust. Such incentive funding or programs are:

- Vehicle Registration Fund Program (VRF)

- Carl Moyer Memorial Air Quality Attainment Program
- Community Air Protection Program (CAPP)
- Short-Haul Zero Emission Truck Pilot Project

AQ-2b. Regional Plan VMT Credit/Banking Program. SANDAG shall establish a VMT Credit / Banking program that captures and banks any VMT reductions that may be associated with VMT reducing infrastructure and programs, such as bicycle infrastructure improvements, pedestrian facilities, and expansion of transit services (VMT Reduction Credits). The VMT reduction credits generated through the program could be used to offset VMT-related impacts caused by induced travel demand that are associated with roadway capacity improvements included within the proposed Plan. Additional credits could also be sold to development projects within the region, consistent with the SCS, to offset their land use related VMT impacts. Revenue from the credits sold through the banking program shall be used to help advance the timing of implementation of VMT reducing infrastructure or programs in the proposed Plan, develop new or further expand the VMT reducing infrastructure and programs included in the proposed Plan, or allocate towards grant funding to construct multi-modal infrastructure within the local jurisdictions. This measure would also reduce emissions of PM_{10} and $PM_{2.5}$ by reducing vehicle traffic on all roadways, including those near sensitive receptor locations. SANDAG shall include a pilot version of this program within the 2029 Regional Plan.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

The PM_{10} impact in both 2035 and 2050 is primarily due to re-entrained road dust, which comprises nearly all the PM_{10} emissions (99 percent in 2035 and 98 percent in 2050).

Mitigation has been identified to reduce PM10 emissions. Mitigation measure AQ-2a would reduce PM_{10} emissions from on-road sources by securing funding to implement ways to reduce all emissions, including PM_{10} emissions from mobile sources. Mitigation measure TRA-2 aims to achieve VMT reductions for transportation and development projects by implementing various plans and programs, including requiring TDM strategies, reducing parking minimums, implementing active transportation facilities beyond those in the proposed Plan, and facilitating a VMT exchange program. Implementation of these actions would reduce PM_{10} emissions from on-road sources by reducing VMT throughout the region.

In addition, mitigation measures GHG-4a, GHG-4b, GHG-4c, GHG-4d, and GHG-4e would reduce PM_{10} emissions from tire wear, brake wear, and vehicle exhaust, as discussed in Section 4.8. In addition, mitigation measure TRA-2 would reduce criteria pollutants through project-level VMT reduction measures, as discussed in Section 4.16. Measures to reduce VMT or vehicle exhaust (e.g., EVs) in these mitigation measures would reduce PM_{10} emissions and associated concentrations.

Mitigation that reduces VMT would reduce PM_{10} emissions from road dust. Meanwhile, mitigation that supports ZE vehicles would reduce PM_{10} emissions associated with vehicle exhaust. However, ZE vehicles still emit road dust, so PM_{10} emissions would remain above the thresholds.

However, for mitigation AQ-2a, as well as other mitigation measures presented in Section 4.8 and Section 4.16, it cannot be guaranteed that PM_{10} emissions would be reduced to where they would be less than cumulatively considerable. Therefore, impacts related to cumulatively considerable net increases in air pollutant emissions would remain significant and unavoidable.

AQ-3 RESULT IN CONSTRUCTION-RELATED EMISSIONS ABOVE REGIONAL MASS EMISSION THRESHOLDS

Analysis Methodology

Projects that could be constructed as part of the proposed Plan would generate construction-related criteria pollutant and TAC emissions from mobile and stationary construction equipment exhaust, employee and haul truck vehicle exhaust, dust from land clearing, and application of asphalt and architectural coatings. However, the specific size, location, and construction techniques and scheduling that would be used for each individual development project occurring from the implementation of the proposed Plan are not currently known. With the horizon year of 2050, development of the various land use changes and transportation network improvements would occur over an extended period of time, depending on factors such as local economic conditions, market demand, and other financing considerations.

The County daily mass emissions SLTs described in the methodology for Impact AQ-2 can be used as thresholds to determine whether the proposed Plan's construction emissions would be significant. At this program level of analysis, it is not possible to quantify the amount of construction emissions from the implementation of the proposed Plan or their health impacts. To the extent that construction emissions would violate ambient air quality standards, they could lead to the health consequences discussed in Section 4.3.1 However, the overall impact on local and regional air quality from any one project or all projects combined would be primarily dependent on the quantity, age, and fuel type of the equipment and the duration of their operation at the construction site or in the region. It should be noted that construction emissions, although not quantified, would add to the concentration impacts in Impacts AQ-4 and AQ-5.

Impact Analysis

2035

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Various transportation and development projects would be constructed by 2035. Construction of land use changes and transportation network improvements would result in emissions of criteria air pollutants, including ROG, NOx, CO, SOx, PM_{10}, and $PM_{2.5}$. Emissions associated with a typical construction project are generally short-term and limited to the construction phase of the project. Construction emission sources include construction equipment, employee commuting, vendor and material deliveries, haul trucks, demolition, grading and other ground disturbing activities, application of paint and other coatings, and paving.

The proposed Plan includes numerous transportation projects by 2035 as part of the SCS, transportation network improvements, and supporting policies and programs. The proposed Plan would also accommodate land use growth to accommodate 137,242 97 housing units, 117,056 new residents, and 67,297 new jobs by 2035 (See Table 2-1, in Section 2.0, "Project Description," of this Draft EIR.). While the construction of each individual project is temporary and limited in nature, the emissions from these projects have the potential to exceed daily thresholds.

EPA and CARB have adopted rules and regulations establishing criteria pollutant and hazardous emissions limits for diesel-powered on-road vehicles and off-road equipment. EPA and CARB regulations will continue to reduce emissions from internal combustion trucks and equipment over the life of the proposed Plan. Further, SDAPCD has rules in place to limit emissions from construction activities, such as Rule 55 (requires measures to minimize fugitive dust during construction and demolition activities) and Rule 51 (restricts the discharge of air contaminants or other material that cause harm, injury, or nuisance). Additionally, construction activities are accounted for in SDAPCD's RAQS and SIP inventories. As demonstrated in the 2020 SIP, and discussed below, total regional emissions of VOC and NOx from construction sources would generally decline through 2050.

Despite regulatory actions from EPA, CARB, and SDAPCD, these regulations cannot ensure that all projects consistent with the proposed Plan would not result in emissions exceeding thresholds. Construction could result in substantial construction-related emissions on a daily or annual basis, exceeding daily thresholds.

2035 Conclusion

The proposed Plan could result in a substantial increase in construction-related emissions exceeding daily thresholds as the various land use changes and transportation network improvements are constructed. Therefore, this impact (AQ-2) would be significant in 2035.

2050

Regional Growth and Land Use Change and Transportation Network Improvements and Programs
The proposed Plan includes numerous transportation projects by 2050 as part of the SCS, transportation network improvements, and supporting policies and programs. The proposed Plan would also accommodate land use growth to accommodate 202,819 new housing units, 112,944 new residents, and 170,757 new jobs by 2050 (See Table 2-1, in Section 2.0, "Project Description," of this Draft EIR). While the construction of each individual project is temporary and limited in nature, the emissions from these projects have the potential to exceed daily thresholds.

EPA and CARB have adopted rules and regulations establishing criteria pollutant and hazardous emissions limits for diesel-powered on-road vehicles and off-road equipment. EPA and CARB regulations will continue to reduce emissions from internal combustion trucks and equipment over the life of the proposed Plan. Further, SDAPCD has rules in place to limit emissions from construction activities, such as Rule 55 (requires measures to minimize fugitive dust during construction and demolition activities) and Rule 51 (restricts the discharge of air contaminants or other material that cause harm, injury, or nuisance). Additionally, construction activities are accounted for in SDAPCD's RAQS and SIP inventories. As demonstrated in the 2020 SIP, and discussed below, total regional emissions of VOC and NOX from construction sources would generally decline through 2050.

Despite regulatory actions from EPA, CARB, and SDAPCD, these regulations cannot ensure that all projects consistent with the proposed Plan would not result in emissions exceeding thresholds. Construction could result in substantial construction-related emissions on a daily or annual basis, exceeding daily thresholds.

2050 Conclusion
The proposed Plan could result in a substantial increase in construction-related emissions exceeding daily thresholds as the various land use changes and transportation network improvements are constructed. Therefore, this impact (AQ-2) would be significant in 2050.

Impacts of the Proposed Plan with Future Climate Change
With continued climate change, growth and land use change and transportation network improvements in the region would result in increased construction emissions or criteria pollutants. Construction sites can generate emissions of criteria pollutants such as particulate matter, nitrogen oxides, carbon monoxide, and volatile organic compounds (Sacramento Metropolitan Air Quality Management District 2020). Climate change may exacerbate these effects through wildfire pollutants and longer dry seasons resulting in droughts and dust emissions (Reidmiller et al. 2018, Pu et al. 2022). The proposed Plan's projected growth and transportation network improvements would increase criteria pollutant emissions. The proposed Plan's air quality impacts would be worsened by climate change-caused increases in criteria pollutant emissions.

MITIGATION MEASURES

AQ-3 RESULT IN CONSTRUCTION-RELATED EMISSIONS ABOVE REGIONAL MASS EMISSION THRESHOLDS

2035, 2050

AQ-3a Implement Construction Best Management Practices for Fugitive Dust. During planning, design, and project-level CEQA review of transportation network improvements and programs or development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, evaluate the potential for localized particulate (PM_{10} and $PM_{2.5}$) construction impacts that result in exceedances of the numerical mass emission thresholds). If impacts are significant, during project level construction, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, implement best management practices (BMPs) to reduce impacts, including but not limited to, the following:

- Use fugitive dust control measures to reduce generation from exposed surfaces during construction, as specified in SDAPCD Rule 55 (SDAPCD 2009). SDAPCD Rule 55 includes various requirements, including preventing visible dust beyond the property line for more than 3 minutes in any 60-minute period, applying dust suppressants, removing all track-out/carry-out dust at the conclusion of each workday. Compliance with these regulatory requirements is a performance standard for mitigation of construction activity particulate emissions. Reductions in fugitive dust emissions range from 40 to 80 percent for minimizing track-out to 90 percent for use of tarps or cargo covering when transporting material (SCAQMD 2007; WGA 2006).
- Use additional fugitive dust control measures such as watering or application of dust suppressants to reduce the generation of fugitive dust at active construction sites. Reductions in fugitive dust emissions range from 10 to 74 percent for watering of unpaved surfaces to 84 percent for use of dust suppressants (WGA 2006; CAPCOA 2025).
- Implement controls on haul trucks to reduce emissions from haul trucks transporting soil, sand, or other loose material off site. Reductions in fugitive dust emissions are estimated at 91 percent for use of tarps or cargo covering when transporting material (SCAQMD 2007).
- Remove visible mud or dirt track-out onto adjacent public roads. Reductions in fugitive dust emissions range from 40 to 80 percent for minimizing track-out (WGA 2006).
- Limit vehicle speeds on unpaved surfaces during construction to 15 mph. Reductions in fugitive dust emissions from unpaved surfaces are estimated at 57 percent (WGA 2006).
- Suspend excavation, grading, and/or demolition activities when average wind speeds exceed 20 mph. Reductions in fugitive dust emissions are estimated at 98 percent (WGA 2006).
- Plant vegetative ground cover (e.g., fast-germinating native grass seed) in disturbed areas. Reductions in fugitive dust emissions from wind erosion are estimated at 90 percent (WGA 2006).
- Wash all trucks and equipment, including their tires, prior to leaving the construction site. No quantitative estimate of the effectiveness of this measure is available.

AQ-3b Reduce Diesel Emissions During Construction From Off-Road Equipment. For impacts on air quality from construction exhaust, during planning, design, and project-level CEQA review of transportation network improvements and programs or development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, implement BMPs to reduce criteria pollutant and TAC impacts from off-road equipment, including, but not limited to, the following:

- Ensure off-road equipment greater than 25 horsepower (hp) that will be operating for more than 20 hours during construction meets the following requirements:
  - Ensure engines are zero emissions or equipped with an CARB Level 3 Verified Diesel Emissions Control Strategy, if available for the equipment being used, unless the equipment meets EPA Tier 4 emission standards.
  - If project-specific analysis demonstrates that the above measure would not adequately reduce impacts (as determined by the project-level lead agency), provide engines that meet or exceed either EPA Tier 4 off-road standards.
- Monitor idling time of diesel-powered construction equipment and limit to no more than 2 minutes.
- Maintain and properly tune construction equipment in accordance with the manufacturers' specifications.
- Prohibit portable diesel generators and use grid power when it is available. Use propane or natural gas generators when grid power electricity is not feasible.
- Use late model engines.
- Use low emission diesel products.

- Use alternative fuels in construction equipment.
- Use engine retrofit technology to control emissions from off-road equipment.

AQ-3c Reduce Diesel Emissions During Construction From On-Road Vehicles. For impacts on air quality from construction exhaust as a result of transportation network improvements and programs or development projects, during project-level CEQA review and construction, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, implement BMPs to reduce criteria pollutant and TAC impacts from on-road vehicles, including but not limited to:

- Monitor idling time of diesel-powered trucks, and limit to no more than 2 minutes.
- Provide clear signage for construction workers at all access points.
- Maintain and properly tune vehicles in accordance with the manufacturers' specifications.
- Ensure that construction activity deliveries are scheduled during off-peak hours (e.g., 10 a.m. to 3 p.m.) and are coordinated to consolidate truck trips. When the movement of construction materials and/or equipment impacts traffic flow, provide temporary traffic control (e.g., flag person) to improve traffic flow.
- Use late model engines (2010 or new model years).
- Use low emission diesel products in on-road vehicles.
- Use zero emission or near-zero emission technologies or alternative fuels in on-road vehicles.
- Use engine retrofit technology on on-road vehicles.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Mitigation measure AQ-3a would reduce the impacts associated with fugitive dust (fugitive PM_{10} and $PM_{2.5}$ emissions) during construction, as well as the impacts associated with exhaust emissions from construction equipment. Mitigation measure AQ-3b would reduce the impacts associated with exhaust emissions from construction equipment. Mitigation measure AQ-3c would reduce diesel emissions from on-road vehicles during construction.

Additionally, mitigation measures GHG-4d and GHG-4e would reduce construction emissions through the use of energy and fuel-efficient vehicles and equipment (see Section 4.8)., Mitigation measures GHG-4a, GHG-4b, and GHG-4c would also facilitate and support the procurement and development of ZEV infrastructure and vehicles, thereby reducing emissions from construction worker vehicles and trucks over time. Although mitigation would reduce impacts, there is no guarantee that all projects' impacts would be reduced to below a level of significance; thus, impacts would be significant and unavoidable.

AQ-4 EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL PM_{10} AND $PM_{2.5}$ CONCENTRATIONS

Analysis Methodology

If the proposed Plan would violate the PM_{10} or $PM_{2.5}$ air quality standards or substantially contribute to an existing violation, then it would be considered to expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations, which in turn would contribute to adverse health effects. Under the CAAQS, the SDAB is designated as a state nonattainment area for PM_{10} and $PM_{2.5}$ (as well as ozone). The San Diego region is in attainment of the NAAQS for PM_{10} and $PM_{2.5}$ (as well as other criteria pollutants). This analysis is based on operational emissions associated with forecasted regional growth and land use change and planned transportation network improvements and programs.

Other pollutants that tend to accumulate in the air locally, such as CO, NO_2, SO_2, and Pb, are not quantitatively considered here because they are all considered attainment pollutants, because the San Diego region meets both the NAAQS and CAAQS.

The analysis in this EIR summarizes the assumptions, methodologies, and technical analyses presented in the *Air Quality Technical Report* (Appendix C of this EIR).

The analysis to evaluate whether the proposed Plan would violate any PM_{10} or $PM_{2.5}$ air quality standard or contribute substantially to an existing projected air quality violation involves two main steps.

1. Existing (2022) baseline mass emissions and future mass emissions in 2035, and 2050 under the proposed Plan were estimated for onroad, freight rail, and commuter rail sources. Methods and assumptions for projecting mass emissions are presented in Appendix C of this EIR. Results are presented in Impact AQ-2.
2. Based on these emission estimates, a detailed localized analysis was performed for each analysis year to determine whether the operational emissions of the proposed Plan would violate an air quality standard or contribute substantially to an existing violation.

Because San Diego County is designated as a state nonattainment area for both PM_{10} and $PM_{2.5}$, localized modeling is performed for both of these pollutants.

Given the spatial limitations in the chosen dispersion model (AERMOD), the populated areas of the county were divided into seven modeling subdomains. Each modeling subdomain was assigned a representative meteorological station and air quality monitoring station.

The monitoring data is summarized as Design Values (DV). A DV is a statistic that describes the air quality status of a given location relative to the level of the NAAQS or the CAAQS. The DV for each pollutant is calculated from monitoring data in a form consistent with the regulations that apply to the CAAQS or NAAQS, in terms of the pollutant averaging period and number of exceedances allowed over a period of typically three years. The DVs used in this analysis were provided by SDAPCD for the 2022-2024 period (Canter pers. comm.).

Background monitoring data were evaluated to determine the appropriate DVs for modeling within each subdomain. While San Diego is currently in nonattainment for both the $PM_{2.5}$ CAAQS and the PM_{10} CAAQS, not all monitoring stations in the region, or subdomains, exceed these CAAQS. Additionally, CARB has recommended that San Diego be designated as nonattainment for the revised annual $PM_{2.5}$ NAAQS. As of July 2025, EPA has not issued designations with respect to the new annual $PM_{2.5}$ standard; this re-designation to nonattainment is likely. For monitoring stations that exceed the respective NAAQS or CAAQS, the PM threshold was equal to the difference between the applicable NAAQS or CAAQS level for PM concentrations (refer to Table 4.3-1) and the DV for that region. For monitoring stations that do not exceed the respective NAAQS or CAAQS, incremental federal Significant Impact Levels (SIL) are used to ensure that a project's emissions do not contribute to an air quality violation.

Based on data provided by SDAPCD (Canter pers. comm.), the Donovan station is in violation of the 24-hour PM_{10} and the revised annual $PM_{2.5}$ NAAQS, and the Sherman Elementary station is in violation of the annual $PM_{2.5}$ NAAQS. There are no violations of the PM_{10} and $PM_{2.5}$ NAAQS at the other monitoring stations. Currently, all stations except for Rancho Carmel exceed the annual PM_{10} CAAQS, all stations except for Lexington Elementary exceed the 24-hour PM_{10} CAAQS, and only Donovan exceeds the annual $PM_{2.5}$ CAAQS.

Where stations already exceed the NAAQS or CAAQS, this analysis compares the incremental changes in concentrations to the SIL; where stationary do not exceed the NAAQS or CAAQS, the incremental change in concentrations are based on the difference between the DV and the NAAQS. For monitoring stations that do not exceed the appropriate CAAQS, comparisons to the appropriate CAAQS are based on the difference between the DV and the CAAQS. For monitoring stations that do exceed some or all NAAQS or CAAQS, comparisons to appropriate NAAQS or CAAQS are based on the applicable SIL.

The SIL values are as follows:

- For PM_{10}, the 24-hour SIL is 3.0 μg/m^3 and the Annual SIL is 5.0 μg/m^3, based on SDAPCD Rule 20.2 (SDAPCD 1998).
- For $PM_{2.5}$, the 24-hour SIL is 1.2 μg/m^3 and the Annual SIL is 0.13 μg/m^3, based on EPA's most recent guidance (EPA 2024).

The AERMOD air dispersion model computes the concentration of substances at specified spatial points. In AERMOD, these points are referred to as receptors (EPA 2024). Receptor and grid spacing used is sufficient to show where public health impacts above District significant risk thresholds may be expected to have occurred (SDAPCD 2024). Ambient receptor locations were determined based on proximity to sources of emissions. Near roadway links that see over 100,000 ADT and any freeway/arterial, receptors were placed within a fine receptor grid of 50 meter spacing, out to 500 ft (150 meters) from the roadway, based on guidance from SDAPCD, BAAQMD, as well as CARB's land use handbook (SDAPCD 2007, BAAQMD 2023, CARB 2005). Additionally, near roadways over 100,000 ADT and any freeway/arterial, receptors were placed within a coarser grid of 250 meter spacing between 150 meters and 1,000 meters. Near smaller non-freeway links greater than 10,000 ADT but less than 100,000 ADT, receptors were placed within a fine grid of 50 meter spacing, out to 500 ft (150 meters) from the roadway.

Health Impacts

As discussed in Section 4.3.1, short-term and long-term exposure to PM_{10} and $PM_{2.5}$ may result in adverse health effects, including:

- Aggravated asthma
- Increases in respiratory symptoms like coughing and difficult or painful breathing
- Chronic bronchitis
- Decreased lung function
- Heart attack
- Premature death

The ambient air quality standards are health-based standards. Therefore, in this impact analysis, when the proposed Plan would result in a new violation of a particulate standard or substantially contribute to an existing air quality standard violation, it also has the potential to contribute to these adverse health effects. Health impacts of diesel particulates, a TAC and subset of PM_{10} and $PM_{2.5}$ emissions, are analyzed separately in Impact AQ-5. This analysis identifies and maps receptors in 2022 and future years within the areas exposed to specified concentrations of PM_{10} and $PM_{2.5}$ emitted from Plan sources. These receptors would be at greatest risk of experiencing the health effects listed above.

Given the limitations of modeling tools and assumptions, receptor exposure numbers are an indication of relative exposure, and not a precise prediction. Also, because of the conservative modeling assumptions (see Appendix C to the EIR), the analysis presents maximum ambient air quality impacts. For these reasons, the actual exposure to particulate matter would likely be lower than presented in this analysis.

To correlate $PM_{2.5}$ emissions changes to anticipated health outcomes, a health impact analysis (HIA) was prepared to evaluate impacts from regional $PM_{2.5}$ emissions. The HIA was completed using EPA's Co-Benefits Risk Assessment (COBRA) screening tool (EPA 2025g). The COBRA health impacts screening and mapping tool can explore how changes in air pollution, specifically $PM_{2.5}$, from an action can affect human health at the county, state, regional, or national levels. PM_{10} impacts were not assessed in the COBRA HIA because health impact functions built into COBRA only consider health outcomes associated with $PM_{2.5}$ and ozone emissions. $PM_{2.5}$ and ozone are well established pollutants in terms of peer-reviewed epidemiological evidence and the concentration-response function, making them the most suitable for modeling (EPA 2024k). COBRA can map and visually represent the air quality and human health impacts from emissions of $PM_{2.5}$ that result from an action. Built into COBRA are emissions inventories, a simplified air quality model to estimate ambient concentrations, and health impact equations ready for use, based on assumptions that the EPA currently uses as reasonable best estimates.

COBRA uses a series of health impact functions, taken from the peer-reviewed epidemiological literature, to estimate how changes in outdoor air quality result in changes in the incidence of a variety of health outcomes (e.g., premature mortality, heart attacks, asthma exacerbation, lost workdays). Incidence refers to the number of new cases of a health outcome over a specified time period. The change in incidence is not necessarily a whole number because COBRA calculates small statistical risk reductions or increases that are then aggregated over the entire population.

COBRA outputs provide county-level changes in air quality (e.g., total annual average $PM_{2.5}$ concentration in $\mu g/m^3$) and incidence of each health endpoint. COBRA provides estimates on changes in mortality, infant mortality, nonfatal heart attacks, respiratory hospital admissions, cardiovascular hospital admissions, acute bronchitis, emergency room visits, work loss days, cardiac arrests, strokes, Parkinson's disease, Alzheimer's disease, lung cancer, hay fever/rhinitis, and asthma exacerbation.

The potential change in $PM_{2.5}$ emissions within San Diego County was reviewed from the 2022 baseline year to horizon years 2035 and 2050. Only $PM_{2.5}$ was reviewed because, although overall emissions will decrease across categories, paved road $PM_{2.5}$ emissions are expected to increase. In addition, localized significant $PM_{2.5}$ impacts may occur at locations near high-ADT roadways in urban center areas and new development areas. The analysis used 2022 on-road and railroad $PM_{2.5}$ emissions as the baseline input and net change in $PM_{2.5}$ emissions for Plan years 2035 and 2050 for the scenario analyses. Population data by age was provided by SANDAG for 2035 and 2050 and input into the model as non-default population data sets. Health incidence and valuation data for 2035 and 2050 was downloaded from EPA's database of COBRA Future Input Files and imported into COBRA. The analysis was performed for two emissions scenarios, one for 2035 and one for 2050. In each scenario, the net increase or decrease in $PM_{2.5}$ emissions from the baseline year was input into the model, by category. These scenarios account for traffic and railroad emissions increases/decreases from the proposed Plan throughout San Diego County.

Since the proposed Plan is a county-wide program which will implement regional scale emissions changes, and COBRA outputs county-level modeling, COBRA is an applicable modeling tool to assess health impacts associated with emissions changes from the Plan. However, it should be noted that there is uncertainty surrounding the values of key components of COBRA. For example, baseline incidence values are best estimates of county-wide health outcome incidences and prevalences for the baseline year input into the model, but in some cases county-level data is not available and national-level estimates are used instead. Sources of baseline incidence data built into COBRA include the Centers for Disease Control (CDC), the U.S Census Bureau, the Agency for Healthcare Research and Quality (AHRQ), the National Health Interview Survey (NHIS), and peer-reviewed epidemiological literature. Health impact functions are based on data from epidemiological literature on the impacts of $PM_{2.5}$ and ozone on public health; however, this relationship between air quality and public health may differ in different locations or contexts. Modeled results should not be interpreted as an exact calculation of something as complex as future $PM_{2.5}$ concentrations, or as correlating a given level of emissions with specific health effects.

Impact Analysis

2035

Regional Growth and Land Use Change and Transportation Network Improvements and Programs As documented in Appendix C, the vast majority of modeled receptors show a decrease in $PM_{2.5}$ and PM_{10} concentrations by 2035, while a smaller portion show an increase, and a subset of those that increase see an increase above thresholds. Maximum changes in concentrations of 24-hour and annual levels of $PM_{2.5}$ and PM_{10} from 2022 to 2035 near pollution sources, under the implementation of the proposed Plan, are shown in Table 4.3-7 and Table 4.3-8, respectively.

For $PM_{2.5}$, modeling indicates a decrease in concentrations in some areas, no change in others, and an increase in some areas. However, concentrations would increase above thresholds within each subdomain that was modeled for $PM_{2.5}$ Annual NAAQS, within the Donovan and Chula Vista modeling subdomains for the $PM_{2.5}$ Annual CAAQS, and within the Donovan and Escondido subdomains for $PM_{2.5}$ 24-hr NAAQS. These $PM_{2.5}$ exceedances are primarily due to road dust from roadway travel, with the maximum incremental concentrations occurring at receptor locations immediately adjacent to freeways and roads that show a large increase in ADT. These $PM_{2.5}$ increases could contribute to a new violation or substantial contribution to an existing air quality standard violation, as these exceedances would occur in modeling subdomains that contain monitoring stations that already exceed NAAQS and/or CAAQS. The impact for $PM_{2.5}$ is significant. The locations of $PM_{2.5}$ exceedances for 2035 are shown in Figure 4.3-2 and Figure 4.3-3.

For PM_{10}, modeling indicates no change in some areas and an increase in other areas. However, concentrations would increase above thresholds for PM_{10} Annual CAAQS and PM_{10} 24-hr CAAQS within each subdomain that was modeled, and within the Donovan and Escondido subdomains for PM_{10} 24-hr NAAQS. These PM_{10} exceedances are due primarily to road dust from roadway travel, and the maximum incremental concentrations are at receptor locations immediately adjacent to freeways and roads that show a large increase in ADT. These PM_{10} increases could contribute to a new violation or substantial contribution to an existing violation. The impact for PM_{10} is significant. The locations of PM_{10} exceedances for 2035 are shown in Figure 4.3-4.

Table 4.3-7 Summary of Incremental $PM_{2.5}$ Concentrations, 2035

Standard	Maximum Incremental Concentration (µg/m³)	Area of Threshold Exceedance (acres)	Significant Impact?
$PM_{2.5}$ Annual NAAQS	10.65	1,343	Yes[1]
$PM_{2.5}$ Annual CAAQS	4.99	1,003	Yes[2]
$PM_{2.5}$ 24-hr NAAQS	22.86	1	Yes[3]

Source: Appendix C

[1] These exceedances occur in each modeling subdomain.

[2] These exceedances occur in the Donovan and Chula Vista modeling subdomains.

[23] These exceedances occur in the Donovan and Escondido modeling subdomains.

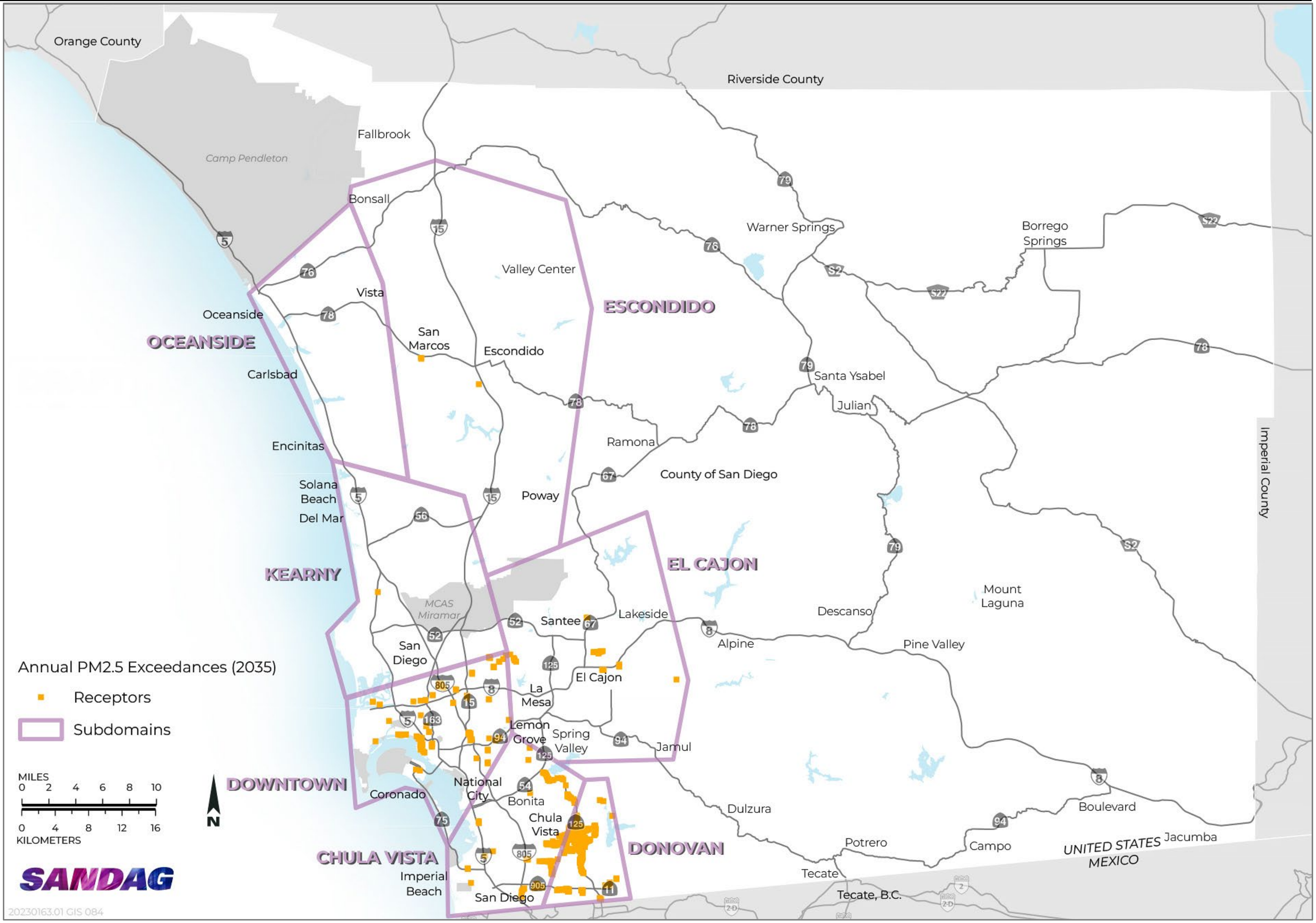
Table 4.3-8 Summary of Incremental PM_{10} Concentrations, 2035

Standard	Maximum Incremental Concentration (µg/m³)	Area of Threshold Exceedance (acres)	Significant Impact?
PM_{10} Annual CAAQS	68.66	4,617	Yes[1]
PM_{10} 24-hr CAAQS	178.51	1,319	Yes[1]
PM_{10} 24-hr NAAQS	158.31	395	Yes[2]

Source: Appendix C

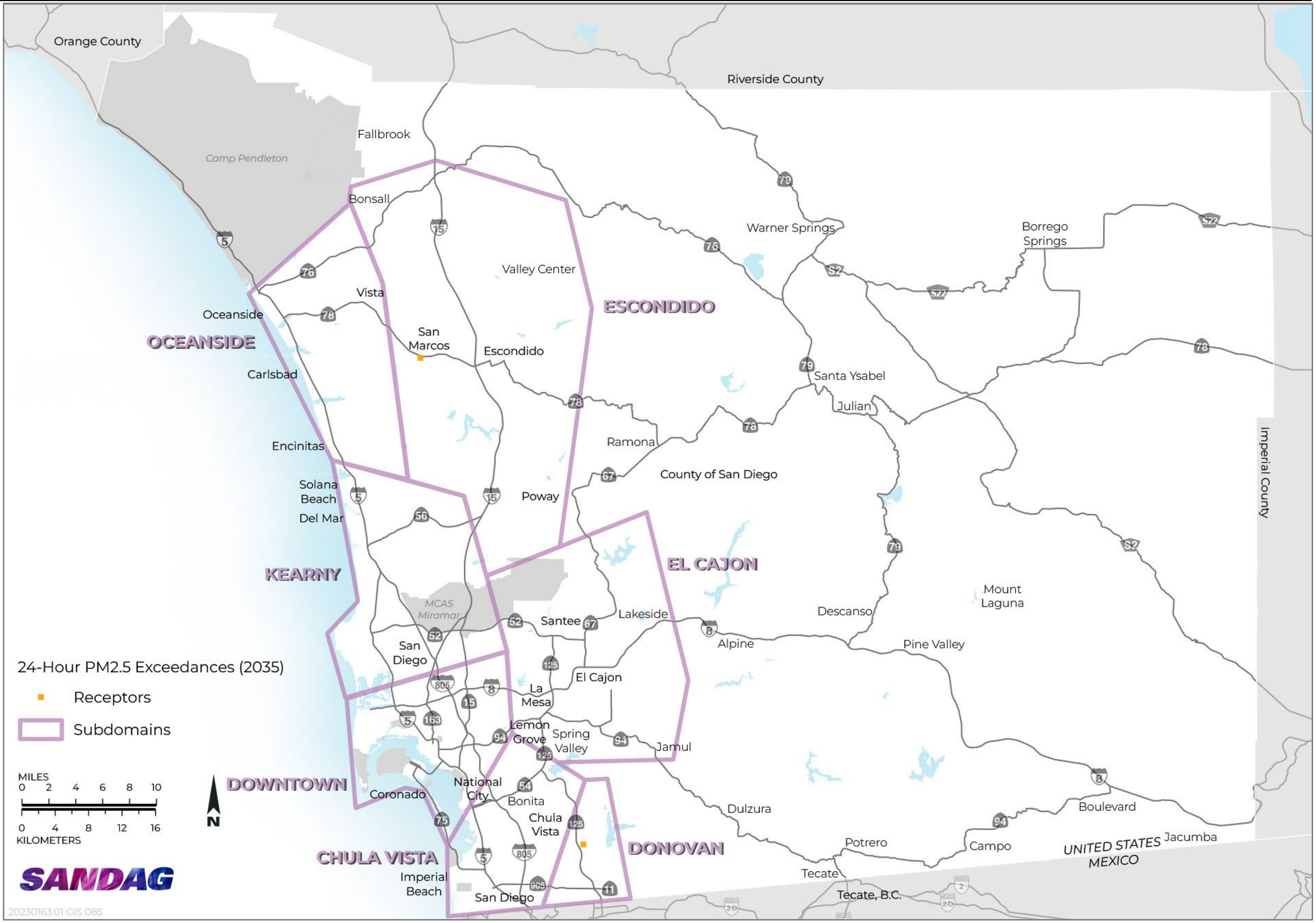
[1] These exceedances occur in each modeling subdomain.

[2] These exceedances occur in the Escondido and Donovan subdomains.



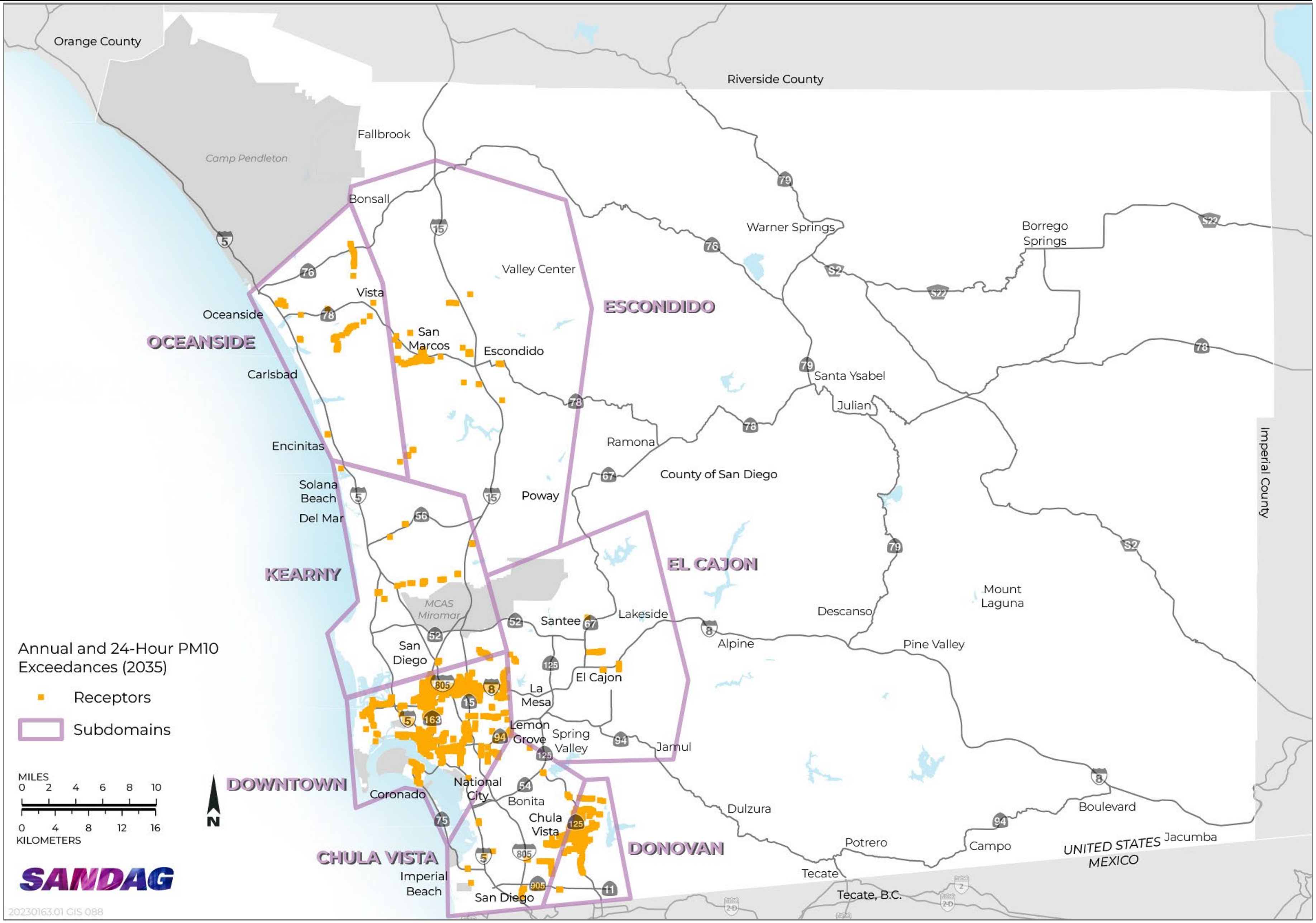
Source:: Adapted by Ascent in 2025.

Figure 4.3-2 Annual $PM_{2.5}$ Exceedances, 2035



Source: Adapted by Ascent in 2025.

Figure 4.3-3 24-Hour $PM_{2.5}$ Exceedances, 2035



Source: Adapted by Ascent in 2025.

Figure 4.3-4 Annual and 24 Hour PM_{10} Exceedances, 2035

COBRA-generated health outcomes from 2035 are shown in Table 4.3-9 below. For San Diego County, changes in $PM_{2.5}$-related health outcomes attributed to proposed Plan-related changes in ambient air concentrations in 2035 included mortality, incidence of outcomes such as asthma, lung cancer, and strokes, work loss days, and number of hospital/emergency room visits. As shown in Table 4.3-9, estimated mortalities avoided due to emission reductions in 2035 is 0.88 (the negative in the value -0.88 means an impact reduction). In other words, approximately one death per year in San Diego County would be avoided with the implementation of the proposed Plan and associated $PM_{2.5}$ emissions reductions. For context, between 2021-2023, the California Department of Public Health (CDPH) reported that San Diego County had an average death rate of 25,033 deaths per year and an age-adjusted death rate of 607.7 mortalities per 100,000 population (CDPH 2025). Based upon these CDPH statistics, the percent increase in health benefit (mortalities avoided) is less than 0.01% for 2035. The health benefits shown in Table 4.3-9 are achieved through reductions in regional $PM_{2.5}$ emissions and concentrations, notwithstanding that some receptors would experience localized increases in localized $PM_{2.5}$ concentrations.

Table 4.3-9 COBRA Health Outcome Results, 2035

Health Outcome	Change in Health Outcomes Due to $PM_{2.5}$ Emissions Reductions[1]
	2035
Mortality, High estimate	-0.88
Infant Mortality	-0.00046
Incidence of Asthma	-0.96
Incidence of Hay Fever	-6.39
ER Visits, Respiratory	-0.20
Hospital Admits, Respiratory	-0.03
Nonfatal Heart Attacks	-0.31
Minor Restricted Activity Days	-339
Work Loss Days	-57.5
Incidence of Lung Cancer	-0.04
Hospital Admits, Various Diseases[2]	-0.37
Incidence of Stroke	-0.03
Incidence of Out of Hospital Cardiac Arrest	-0.01
ER Visits, Cardiac Outcomes	-0.13

Source: Appendix C

[1] Negative numbers indicate a decrease in incidence or reduction in impact

[2] Cardio-, cerebro- and peripheral vascular disease, Alzheimer's disease, and Parkinson's disease

2035 Conclusion

Implementation of forecasted regional growth and land use change and planned transportation network improvements and programs by 2035 under the proposed Plan could substantially contribute to violations or create new violations of the $PM_{2.5}$ Annual NAAQS, $PM_{2.5}$ Annual CAAQS, $PM_{2.5}$ 24hr NAAQS, PM_{10} Annual CAAQS, PM_{10} 24hr CAAQS, and PM_{10} 24hr NAAQS. Implementation of the proposed Plan would lead to avoided $PM_{2.5}$-related health outcomes at the regional level in 2035. Nonetheless, because some receptors would experience localized increases in PM_{10} and $PM_{2.5}$ concentrations in exceedance of ambient air quality standards, this impact is significant in 2035.

2050

Regional Growth and Land Use Change and Transportation Network Improvements and Programs As documented in Appendix C, the vast majority of modeled receptors show a decrease in $PM_{2.5}$ and PM_{10} concentrations by 2035, while a smaller portion show an increase, and a subset of those that increase see an increase above thresholds. Maximum changes in concentrations of 24-hour and annual levels of $PM_{2.5}$ and PM_{10} from 2022 to 2050 near pollution sources under the implementation of the proposed Plan are shown in Table 4.3-10 and Table 4.3-11, respectively.

For $PM_{2.5}$, modeling indicates no change in concentrations in some areas, a decrease in some areas, and a increase in some areas. However, concentrations would increase above thresholds for within each subdomain that was modeled for $PM_{2.5}$ Annual NAAQS, within the Donovan and Chula Vista modeling subdomains for the $PM_{2.5}$ Annual CAAQS., and within the Donovan and Escondido subdomains for $PM_{2.5}$ 24-hr NAAQS. These $PM_{2.5}$ exceedances are primarily due to road dust from roadway travel, with the maximum incremental concentrations occurring at receptor locations immediately adjacent to freeways and roads that show a large increase in ADT. These $PM_{2.5}$ increases could contribute to a new violation or substantial contribution to an existing violation, as these exceedances would occur in modeling subdomains that contain monitoring stations that already exceed NAAQS and/or CAAQS. The impact for $PM_{2.5}$ is significant. The locations of $PM_{2.5}$ exceedances for 2050 are shown in Figure 4.3-5 and Figure 4.3-6.

For PM_{10}, modeling indicates no change in some areas and an increase in some areas. However, concentrations would increase above thresholds for PM_{10} Annual CAAQS and PM_{10} 24-hr CAAQS within each subdomain that was modeled, and within the Donovan and Escondido subdomains for PM_{10} 24-hr NAAQS. These PM_{10} exceedances are primarily due to road dust from roadway travel, with maximum incremental concentrations occurring at receptor locations immediately adjacent to freeways and roads that show a large increase in ADT. These PM_{10} increases could contribute to a new violation or substantial contribution to an existing violation as these exceedances would occur in modeling subdomains that contain monitoring stations that already exceed NAAQS and/or CAAQS. The impact for PM_{10} is significant. The locations of PM_{10} exceedances for 2050 are shown in Figure 4.3-7.

Table 4.3-10 Summary of Incremental $PM_{2.5}$ Concentrations, 2050

Standard	Maximum Incremental Concentration ($\mu g/m^3$)	Area of Threshold Exceedance (acres)	Significant Impact?
$PM_{2.5}$ Annual NAAQS	10.33	1,845	Yes[1]
$PM_{2.5}$ Annual CAAQS	9.33	1,428	Yes[2]
$PM_{2.5}$ 24-hr NAAQS	22.26	2	Yes[3]

Source: Appendix C

[1] These exceedances occur in each modeling subdomain.

[2] These exceedances occur in the Donovan and Chula Vista modeling subdomains.

[3] These exceedances occur in the Donovan and Escondido modeling subdomains.

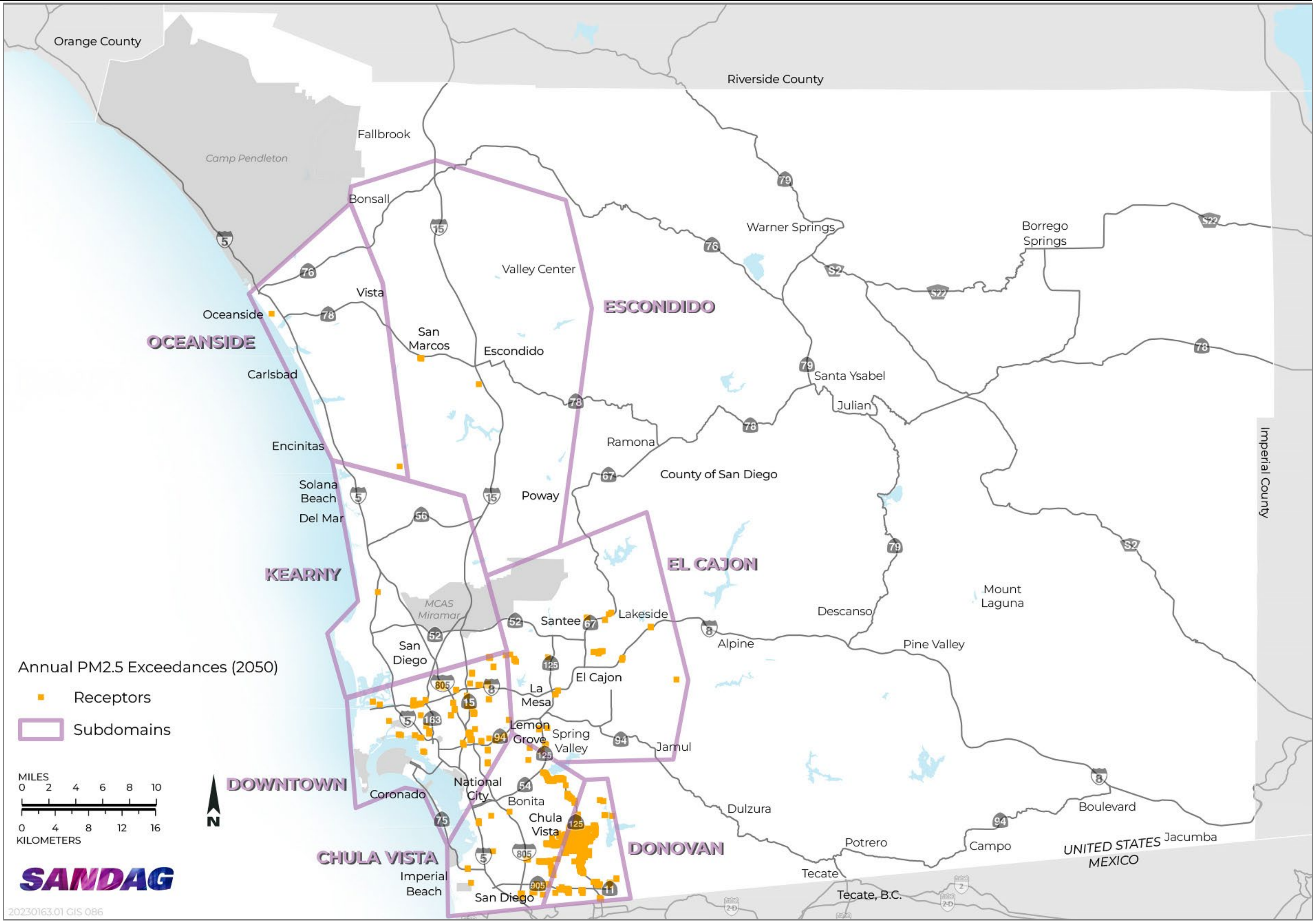
Table 4.3-11 Summary of Incremental PM_{10} Concentrations, 2050

Standard	Maximum Incremental Concentration ($\mu g/m^3$)	Area of Threshold Exceedance (acres)	Significant Impact?
PM_{10} Annual CAAQS	67.08	5,067	Yes[1]
PM_{10} 24-hr CAAQS	174.61	1,638	Yes[1]
PM_{10} 24-hr NAAQS	154.96	636	Yes[2]

Source: Appendix C

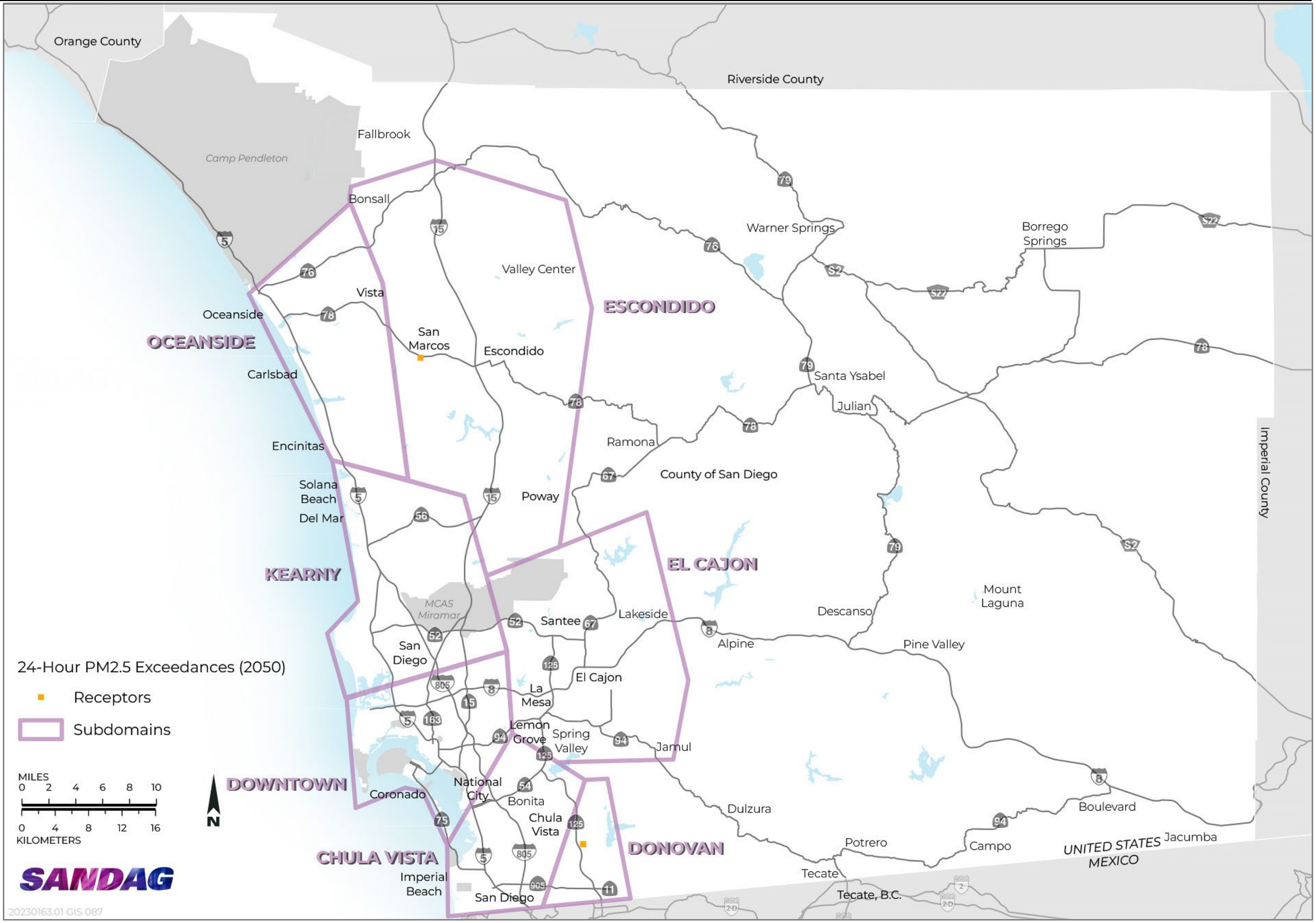
[1] These exceedances occur in each modeling subdomain.

[2] These exceedances occur in the Escondido and Donovan subdomains.



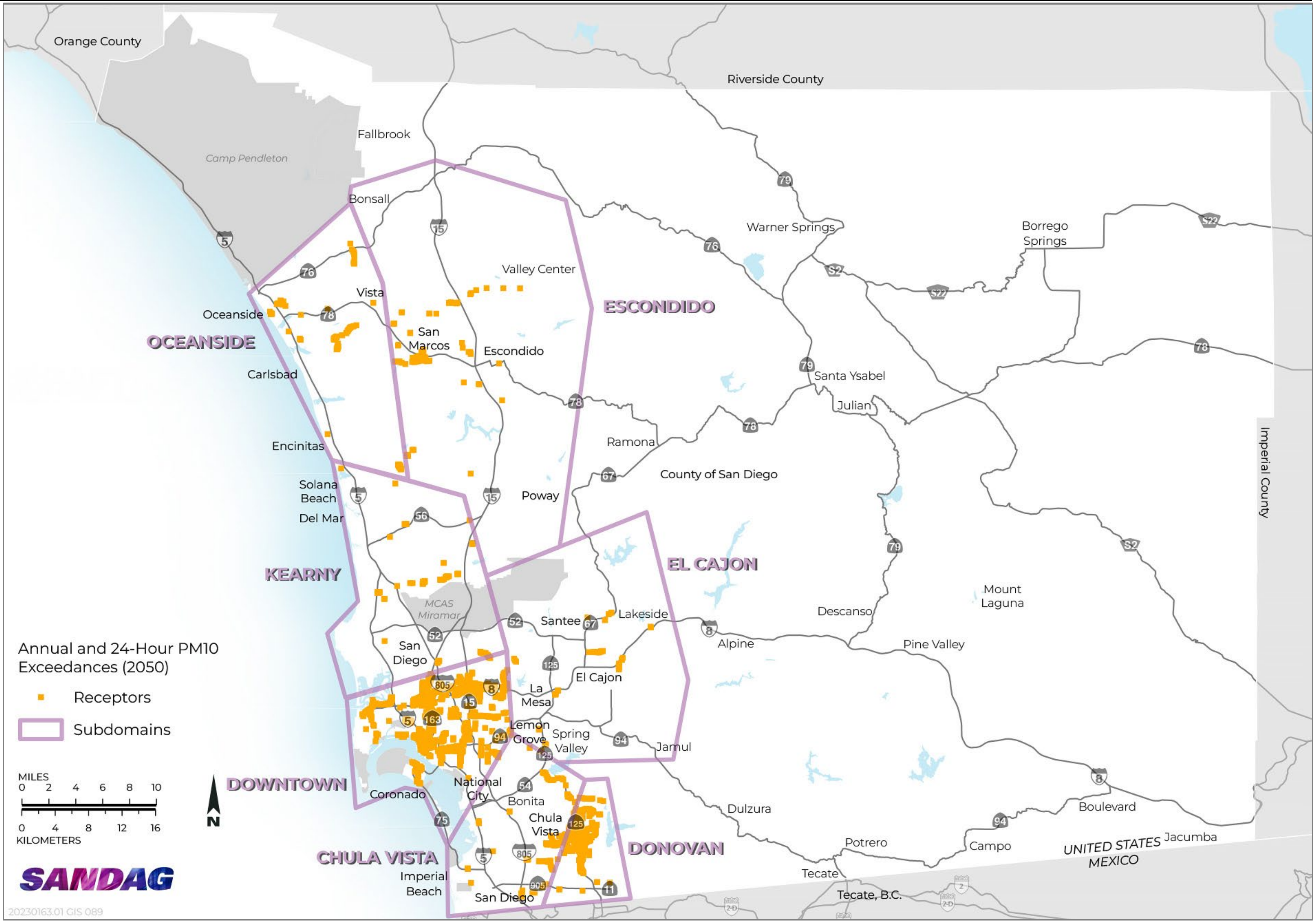
Source: Adapted by Ascent in 2025.

Figure 4.3-5 Annual $PM_{2.5}$ Exceedances, 2050



Source: Adapted by Ascent in 2025.

Figure 4.3-6 24-Hour $PM_{2.5}$ Exceedances, 2050



Source: Adapted by Ascent in 2025.

Figure 4.3-7 Annual and 24 Hour PM_{10} Exceedances, 2050

COBRA-generated health outcomes from 2050 are shown in Table 4.3-12 below. For San Diego County, changes in $PM_{2.5}$-related health outcomes attributed to Project-related changes in ambient air concentrations in 2050 included mortality, incidence of outcomes such as asthma, lung cancer, and strokes, work loss days, and number of hospital/emergency room visits. As shown in Table 4.3-12, estimated mortalities avoided due to emission reductions in 2050 is 1.27 (the negative in the value -1.27 means an impact reduction). In other words, approximately one death per year in San Diego County would be avoided with the implementation of the proposed Plan and associated $PM_{2.5}$ emissions reductions. For context, between 2021-2023, the California Department of Public Health (CDPH) reported that San Diego County had an average death rate of 25,033 deaths per year and an age-adjusted death rate of 607.7 mortalities per 100,000 population (CDPH 2025). Based upon these CDPH statistics, the percent increase in health benefit (mortalities avoided) is less than 0.01% for 2050. The health benefits shown in Table 4.3-12 are achieved through reductions in regional $PM_{2.5}$ emissions and concentrations, notwithstanding that some receptors would experience localized increases in localized $PM_{2.5}$ concentrations.

Table 4.3-12 COBRA Health Outcome Results, 2050

Health Outcome	Change in Health Outcomes Due to $PM_{2.5}$ Emissions Reductions[1]
	2050
Mortality, High estimate	-1.27
Infant Mortality	-0.0005
Incidence of Asthma	-1.21
Incidence of Hay Fever	-8.20
ER Visits, Respiratory	-0.27
Hospital Admits, Respiratory	-0.05
Nonfatal Heart Attacks	-0.46
Minor Restricted Activity Days	-441
Work Loss Days	-74.6
Incidence of Lung Cancer	-0.05
Hospital Admits, Various Diseases[2]	-0.57
Incidence of Stroke	-0.04
Incidence of Out of Hospital Cardiac Arrest	-0.01
ER Visits, Cardiac Outcomes	-0.18

Source: Appendix C.

[1] Negative numbers indicate a decrease in incidence or reduction in impact

[2] Cardio-, cerebro- and peripheral vascular disease, Alzheimer's disease, and Parkinson's disease

2050 Conclusion

Implementation of forecasted regional growth and land use change and planned transportation network improvements and programs by 2050 under the proposed Plan would could substantially contribute to violations or create new violations of the $PM_{2.5}$ Annual NAAQS, $PM_{2.5}$ Annual CAAQS, $PM_{2.5}$ 24hr NAAQS, PM_{10} Annual CAAQS, PM_{10} 24hr CAAQS, and PM_{10} 24hr NAAQS. Implementation of the proposed Plan would lead to avoided $PM_{2.5}$-related health outcomes at the regional level in 2050. Nonetheless, because some receptors would experience localized increases in PM_{10} and $PM_{2.5}$ concentrations in exceedance of ambient air quality standards, this impact is significant in 2050.

Impacts of the Proposed Plan with Future Climate Change

With continued climate change, growth and land use change and transportation network improvements in the region would result in exposure of sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations. Climate change may result in increased wildfire frequency and intensity, which can increase emissions of particulate matter. Precipitation during dry seasons may also decrease under climate change, reducing regional ability to fight wildfires and reduce this source of particulate matter (Reidmiller et al. 2018). Increased droughts would also increase dust emissions (Pu et al. 2022). As the proposed Plan would result in increased exposure of sensitive receptors to PM_{10} and $PM_{2.5}$, the air quality impacts expected from climate change may also worsen the proposed Plan's PM impacts.

MITIGATION MEASURES

AQ-4 EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL PM_{10} AND $PM_{2.5}$ CONCENTRATIONS

2035, 2050

Implement mitigation measure **AQ-2a** and **AQ-2b**, as discussed under Impact AQ-2. Mitigation measures **AQ-2a** and **AQ-2b** would reduce VMT and associated emissions, including road dust, which is the primary cause of the PM_{10} and $PM_{2.5}$ exceedances discussed herein.

The following mitigation measures presented in Section 4.8 will further reduce PM_{10} and $PM_{2.5}$ emissions:

- GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions
- GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans
- GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure.
- GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects
- GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects

The following mitigation measure presented in Section 4.16 will further reduce PM_{10} and $PM_{2.5}$ emissions by reducing VMT:

- TRA-2: Achieve Further VMT Reductions for Transportation and Development Projects

In addition, the following measure is proposed:

AQ-4 Reduce Exposure to Localized Particulate Emissions. During planning, design, and project-level CEQA review of transportation network improvements and programs, and during planning, design, and project-level CEQA review of development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, evaluate the potential particulate matter concentration impacts of the project using applicable procedures and guidelines for such analyses. If exceedances of PM_{10} or $PM_{2.5}$ standards are predicted, SANDAG shall, and other transportation project sponsors can and should, apply measures to reduce PM emissions, including but not limited to the following:

- Design sites to locate sensitive receptors more than 500 feet of a freeway, 500 feet of urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
- Design sites to locate sensitive receptors more than 1,000 feet of a major diesel rail service or railyards.

Where adequate buffer cannot be implemented, implement the following:

- Install air filtration (as part of mechanical ventilation systems or stand-alone air cleaners) to indoor reduce pollution exposure for residents and other sensitive populations in buildings that are close to transportation network improvement projects. Use air filtration devices rated MERV-13 or higher. As part of implementing this measure, require an ongoing maintenance plan for the building's Heating, Ventilation and Air Conditioning (HVAC) air filtration system. Air filtration devices rated MERV-13 are estimated to reduce indoor levels of particulates by 75 to 90 percent (CARB 2017).

- Plant trees and/or vegetation suited to trapping roadway air pollution and/or sound walls between sensitive receptors and the pollution source. This measure would trap pollution emitted from pollution sources such as freeways, reducing the amount of pollution to which residents and other sensitive populations would be exposed. The vegetation buffer should be thick, with full coverage from the ground to the top of the canopy (CARB 2017, Baldauf 2016). Vegetation can be combined with sound walls to further reduce pollution exposure, particularly for locations immediately behind the barrier.
- Design streets that have more open space and varied building heights.
- Move bus stops and other gathering location farther from intersections.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Mitigation measure AQ-2a will help secure incentive funding to reduce PM emissions from mobile sources. Mitigation measures AQ-2b will help reduce VMT which will reduce PM emissions from mobile sources on freeways and other roadways. Mitigation measure AQ-4 will reduce the exposure of sensitive receptors to localized PM emissions with the implementation of design measures.

Mitigation measures GHG-4a, GHG-4b, GHG 4-c, GHG-4d, and GHG-4e would reduce PM_{10} and $PM_{2.5}$ emissions from tire wear, brake wear, and vehicle exhaust, as discussed in Section 4.8. In addition, mitigation measure TRA-2 would reduce PM_{10} and $PM_{2.5}$ emissions through project-level VMT reduction measures, as discussed in Section 4.16.Measures to reduce VMT or vehicle exhaust (e.g., EVs) in these mitigation measures would reduce PM_{10} and $PM_{2.5}$ emissions and associated concentrations.

Although mitigation would reduce impacts, there is no guarantee that impacts would be reduced to below a level of significance. Impacts would remain significant for both 2035 and 2050. Thus, impacts would be significant and unavoidable.

AQ-5 EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL TAC CONCENTRATIONS

Analysis Methodology

This analysis addresses the exposure of sensitive receptors to substantial concentrations of TACs. A health risk assessment was performed to analyze exposure of sensitive receptors to substantial concentrations of TACs; increases in cancer risk were associated with such exposure. For this analysis, sensitive receptors are defined as residential, school, and recreational land uses.

The analysis in this EIR summarizes the assumptions, methodologies, and technical analyses presented in the *Air Quality Technical Report* (Appendix C of this EIR).

The cancer risk of a given area is a measure of any one person’s likelihood of contracting cancer due to exposure from a particular carcinogen; it is not a measure of how many people will contract cancer. For example, for an area with an increase in cancer risk of 10 in 1 million, any one person’s likelihood of contracting cancer would increase by 10 chances in 1 million (i.e., the increased likelihood of contracting cancer would increase by 0.001 percent). Moreover, in estimating any one person’s cancer risk in residential uses, the analysis assumes that the person would stay in the same place for 30 years, 7 days a week, 24 hours a day, 350 days a year. The analysis follows the OEHHA guidelines (OEHHA, 2015), as recommended by SDAPCD, and utilizes the 95th percentile breathing rates and other conservative assumptions to calculate exposure to TACs. Accordingly, this analysis is designed to provide a conservative estimate of cancer risk and likely overestimates the actual impacts that would occur.

This analysis evaluates both increases in cancer risk from the baseline risk and total (or cumulative) cancer risk from the transportation network, including diesel locomotives, stationary sources, and on-road mobile sources. The increased cancer risk analysis compares the estimated risks for 2035 and 2050 with the existing baseline risks (2022) and evaluates whether there is an increase above 10 in 1 million (i.e., the likelihood of contracting cancer would increase by 0.001 percent) from changes in the transportation network. Total (or cumulative) cancer risk is not based on a comparison with baseline levels but rather identifies the areas in which the total (or cumulative) cancer risk from the transportation network plus stationary sources would exceed 100 in 1 million (i.e., likelihood of contracting cancer of 0.01 percent) in 2035 and 2050.

Exposure to TACs may result in noncancer health effects as well as increases in cancer risk, as described in Section 4.3.1, Existing Conditions. The noncancer health effects analysis involves calculating the total health hazard index (THI) (OEHHA 2015). A health hazard index is a comparison of the concentration of a TAC to the level at which adverse noncancer health effects would be experienced (the recommended exposure limit [REL] for TAC emissions). The calculation involves dividing the predicted TAC concentration by its REL. This analysis focused on evaluating the THI at the maximally exposed individual receptor (MEIR). If the maximum THI is greater than 1.0, the concentration to which an individual is exposed would be above the level at which noncancer health effects could occur, and a significant impact would result. If it is below 1.0, then noncancer health effects would not be expected to occur. The analysis examines the generation of TACs from planned transportation network improvements and programs under the proposed Plan, as well as the placement of existing and new sensitive receptors in locations where they would be exposed to substantial concentrations of TACs under forecasted regional growth and land use changes under the proposed Plan. Note that transportation network improvements and programs under the proposed Plan include both increased motor vehicle travel on the roadway network and increased passenger rail activity along passenger rail lines throughout the region, as shown in Figures 2-6 through 2-14 in Chapter 2, Project Description.

As described in detail above, the following criteria are used to evaluate whether implementation of the proposed Plan would expose sensitive receptors to substantial concentrations of TACs:

1. Does the proposed Plan result in increases in cancer risk to sensitive receptors over baseline (2022) conditions that exceed 10 in 1 million?
2. Does the proposed Plan expose sensitive receptors to total cancer risks above 100 in 1 million?
3. Does the proposed Plan result in increases in health risks to sensitive receptors for noncancer hazards as measured by a THI above 1.0?

The analysis also discloses TAC exposure of new land use added by the Regional Plan's regional growth and land use changes. Sensitive receptors associated with new land uses include future residential and park uses near existing pollution sources, such as roads, rail, and stationary sources.

The Supreme Court in *California Building Industry Assoc. v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369 (*CBIA v. BAAQMD*) considered the issue of whether such TAC exposure of new receptors added by a project represents an environmental impact under CEQA. In that case, the California Building Industry Association challenged the Bay Area Air Quality Management District's (BAAQMD) adoption of new CEQA thresholds for determining whether a project's exposure to existing levels of TACs would result in a significant impact. The Supreme Court's review of the case focused on whether CEQA requires an analysis of how existing environmental conditions will impact future residents or users (receptors) of a proposed project. After reviewing the CEQA statute and Section 15126.2(a) of the State CEQA Guidelines, the Court concluded that CEQA generally does not require an analysis of how existing environmental conditions will impact a project's future users or residents.

The Court did not exclude all consideration of existing hazards from CEQA analysis. An agency must evaluate existing conditions in order to assess whether a project could exacerbate hazards that are already present. In light of the Court's decision, exposure of future project land uses to existing air quality conditions, including TAC risks, that would not be exacerbated by a project, is not subject to CEQA analysis. Nevertheless, recognizing the unique nature of the Proposed Regional Plan, which encompasses both regional growth, land use change, and transportation network improvements, the Impact AQ-5 analysis does voluntarily consider the exposure of future land uses to existing TAC risks as an impact. The methodology and detailed results of the health risk assessment are described in Appendix C. Due to the nature of this analysis, the combined impacts of regional growth, land use change, transportation network improvements, and programs are presented together.

Health Impacts

Exposure to diesel particulates and TACs may result in adverse health effects, both increased cancer risk as well as noncancer health effects, as described in Section 4.3.1.

This HRA identifies and maps sensitive receptors in 2022 and future years within the areas exposed to specified concentrations of TAC emissions to determine where cancer and non-cancer risk thresholds are exceeded. For the HRA, sensitive receptors are locations represented by residential, school, and recreational land uses. HRA results are presented separately for cancer and non-cancer effects. For cancer risks, the results include a summary of the risk at the maximally exposed sensitive receptor, and the area (in acres) that exceed the applicable threshold, which is 10 in 1 million for plan-level increase in risk and 100 in 1 million for cumulative effects. For non-cancer risks, the results include a summary of the risk at the maximally exposed sensitive receptor, and the area (in acres) that exceed the applicable threshold, which is 1.0 for both chronic and acute hazard effects.

Given the limitations of modeling tools and assumptions, sensitive receptor exposure numbers are an indication of relative exposure, and not a precise prediction. Actual exposure would be lower because of the conservative EMFAC2021 modeling assumptions used in the cancer risk analysis (see above). The cancer risk of a given area is a measure of any one person's likelihood of contracting cancer due to exposure from a particular carcinogen; it is not a measure of how many people will contract cancer.

Impact Analysis

2035

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

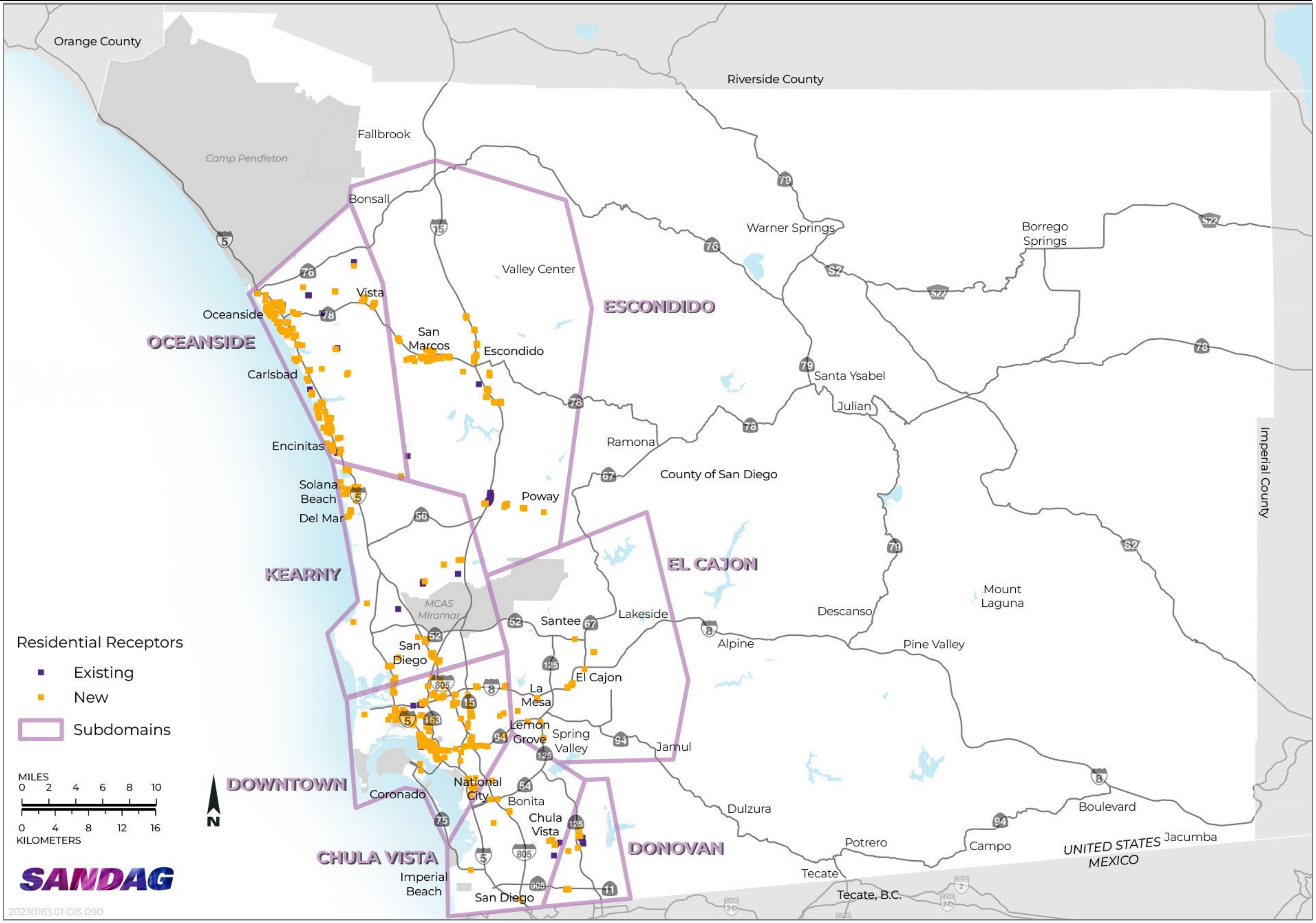
Criterion 1: Does the proposed Plan result in increases in cancer risk to sensitive receptors over baseline (2022) conditions that exceed 10 in 1 million?

Table 4.3-13 summarizes health effects in 2035 for the three receptor types.

For land uses near existing roadways and rail sources, the incremental risk at the maximally exposed sensitive receptors is higher than 2022 conditions. The incremental risk at the maximally exposed sensitive receptors decreases for most receptors, but there are several residential areas that would see an increase that exceeds the 10 in 1 million threshold. The increase at recreational and school uses would be below the 10 in 1 million threshold at each location. Therefore, the impact on sensitive receptors (residential uses) near existing emission sources would be significant.

For new sensitive receptors in new land uses, the incremental risk at the maximally exposed sensitive receptors exceeds the threshold at residential receptors. The threshold is exceeded at various residential receptors within each modeling subdomain due to siting of new residential uses near existing rail and roadway sources. The maximally exposed areas are within each modeling subdomain. Risk exceeds the 10 in 1 million threshold in a number of locations due to the siting of new land uses. Therefore, the impact on new sensitive receptors in new land uses is significant.

Sensitive receptors exposed to incremental increase in cancer risk above thresholds in 2035 are shown in Figure 4.3-8.



Source: Adapted by Ascent in 2025.

Figure 4.3-8 Cancer Risk Exceedances, 2035

Table 4.3-13 Summary of Cancer Risk, 2035

Receptor Type	2022 Maximum Cancer Risk (per million)	2035 Maximum Cancer Risk (per million)	2035 – 2022 Maximum Incremental Change (per million)	2035 – 2022 Incremental Area of Threshold Exceedance (acres)
Existing Receptors				
Residential	255	275	49	80
Recreational	41	44	3	0
School	50	53	3	0
New Receptors				
Residential	-	241	241	694
Recreational	-	8.3	8.3	0
School	-	3	3	0

Source: Appendix C.

Notes: Cancer risk threshold is 10 in 1 million. Modeled cancer risks were rounded to the nearest whole number

Criterion 2: Does the proposed Plan expose sensitive receptors to total cumulative cancer risks above 100 in one million?

Table 4.3-14 summarizes cumulative health risk at residential sensitive receptors in 2035 compared to 2022 conditions. As shown, the maximum cumulative cancer risk and the number of sensitive receptors in the modeling exposed to 100 per million health risk would increase. This increase in exposure is due to an increase in VMT and rail activity by 2035. While regulatory policies that reduce emissions from diesel trains, diesel vehicles, and gasoline vehicles, through state and federal programs designed to reduce emissions of TACs and improve fuel efficiency, would reduce emissions from vehicle traffic and rail locomotives, the increase in activity would outweigh the emission reductions associated with these regulations. Thus, an increase in the number of exposed individuals would occur due to the proposed Plan's forecasted increase in the population and housing units within the region and associated growth in motor vehicle and rail activity.

The SCS portion of the proposed Plan includes proposed land use changes that reflect smart growth, transit-oriented development, preserving natural resources and agricultural lands. The Series 15 Forecast and proposed SCS land use pattern reflect a move toward more sustainable urban growth models. Land use growth is proposed for communities with a high concentration of people, destinations, and travel choices, where densification is envisioned in the SCS.

Many of these proposed land uses are located in areas near existing pollution sources. Although the proposed Plan would contribute to TAC emissions at both the regional and local scale, these increases would not increase existing hazards when taking into account the reduction of emissions over time due to regulatory policies.

Table 4.3-14 Summary of Cumulative Health Risk, 2035

Receptor Type	2022 Maximum Cumulative Cancer Risk (per million)	2022 Area of Threshold Exceedance (acres)	2035 Maximum Cumulative Cancer Risk (per million)	2035 Area of Threshold Exceedance (acres)	2035 – 2022 Maximum Incremental Change (per million)	2035 – 2022 Incremental Area of Threshold Exceedance (acres)
Residential	256	34	276	64	20	30

Source: Appendix C.

A summary of region-wide TAC emissions is shown in Table 4.3-15. Overall, TAC emissions reduce 38 to 57 percent relative to 2022 at the scale of the entire Plan area. Despite this reduction in TACs at the regional scale, numerous individual roadways and rail lines would see an increase in TAC emissions. The proposed Plan would increase existing hazards, taking into account the effect of regulatory policies over time. Based on the above analysis, this impact is therefore significant.

Table 4.3-15 Summary of TAC Emissions, Tons Per Day, 2035

Pollutant	2022	2035	Change Vs 2022
Butadiene1,3	0.052	0.022	-57%
Acetaldehyde	0.032	0.013	-57%
Acrolein	0.010	0.004	-57%
Benzene	0.204	0.087	-57%
Ethyl Benzene	0.100	0.043	-57%
Formaldehyde	0.137	0.059	-57%
Naphthalene	0.047	0.025	-47%
PAH	0.047	0.025	-47%
DPM	0.034	0.021	-38%

Source: Appendix C

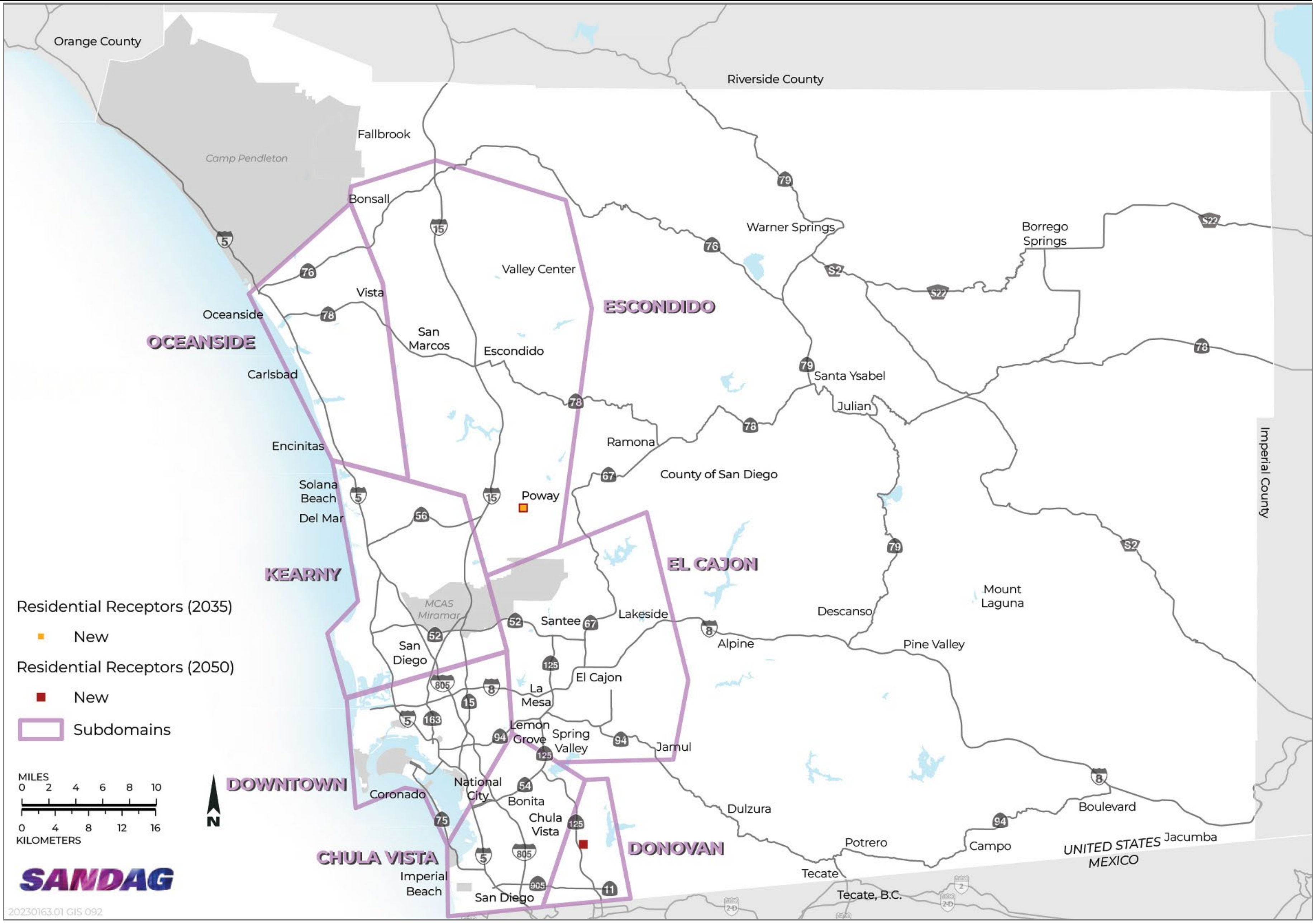
Criterion 3: Does the proposed Plan result in increases in health risks to sensitive receptors for noncancer hazards as measured by a THI above 1.0?

Table 4.3-16 summarizes non-cancer health effects in 2035 for the three receptor types.

For land uses near existing roadway and rail sources, the incremental noncancer risk at the maximally exposed sensitive receptors is below 2022 conditions. For all residential, park, or school sensitive receptors near existing roadway and rail sources, there are no sensitive receptors that show an increase in chronic hazard index or acute hazard index in 2035 relative to 2022 conditions. Therefore, the impact on sensitive receptors near existing emission sources is less than significant.

For new sensitive receptors in new land uses, the incremental noncancer chronic hazard index at the maximally exposed sensitive receptors exceed the threshold at residential receptors. The chronic hazard index threshold is exceeded at several residential receptors within the Donovan subdomain due to siting of new residential uses near existing rail and roadway sources. Therefore, the impact on new sensitive receptors in new land uses is significant for chronic hazard index. There are no exceedances of the acute hazard index threshold (Appendix C).

Sensitive receptors exposed to incremental increase in chronic hazard index above thresholds in 2035 are shown in Figure 4.3-9. Because there are no exceedances of the acute hazard index in 2035, no figure is provided.



Source: Adapted by Ascent in 2025.

Figure 4.3-9 Chronic Hazard Index Exceedances, 2035 and 2050

Table 4.3-16 Summary of Non Cancer Hazard Index, 2035

Receptor Type	2022 Maximum Hazard Acute Hazard Index	2022 Maximum Hazard Chronic Hazard Index	2035 – 2022 Incremental Maximum Change Acute Hazard Index	2035 – 2022 Incremental Maximum Change Chronic Hazard Index	Incremental Area Exceeding Threshold (acres) Acute Hazard Index	Incremental Area Exceeding Threshold (acres) Chronic Hazard Index
Existing Receptors						
Residential	0.62	1.39	0.10	0.62	0	0
Recreational	0.52	0.07	0.13	0.02	0	0
School	0.59	0.19	0.06	0.06	0	0
New Receptors						
Residential	-	-	0.34	1.29	0	1
Recreational	-	-	0.28	0.02	0	0
School	-	-	0.14	0.04	0	0

Source: Appendix C.

Notes: Noncancer hazard risk threshold is 1.0 for both Acute and Chronic Hazards. Modeled noncancer hazard risks were rounded to the nearest two decimal places.

2035 Conclusion

Implementation of the proposed Plan would expose existing sensitive receptors and new receptors to substantial concentrations of TAC emissions. Therefore, this impact is significant in 2035.

2050

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

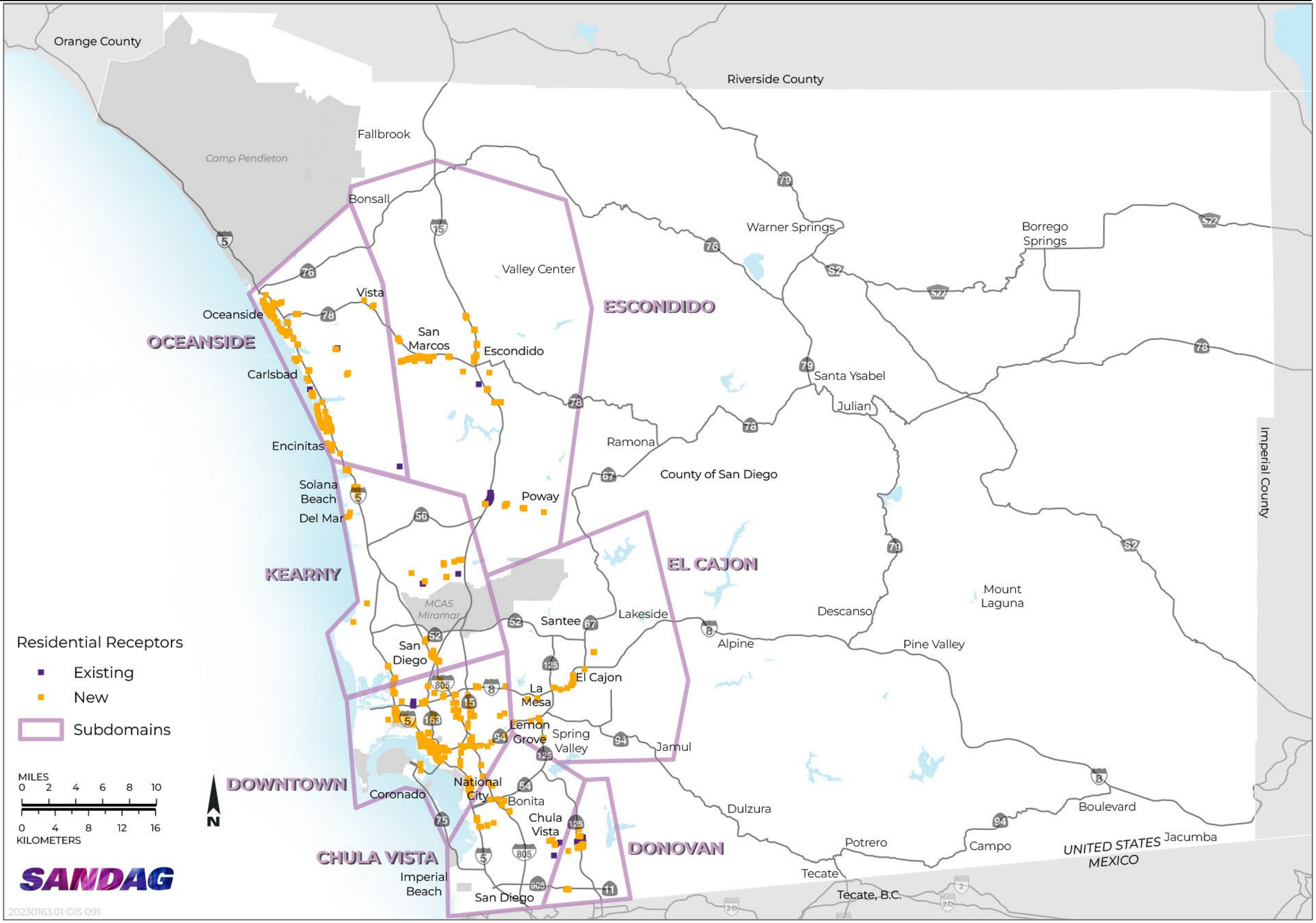
Criterion 1: Does the proposed Plan result in increases in cancer risk to sensitive receptors over baseline (2022) conditions that exceed 10 in 1 million?

Table 4.3-17 summarizes health effects in 2050 for the three receptor types.

For land uses near existing roadways and rail sources, the incremental risk at the maximally exposed sensitive receptors is above 2022 conditions. The incremental risk at the maximally exposed sensitive receptors decreases for most receptors, but there are several residential areas that would see an incremental risk increase that exceeds the 10 in 1 million threshold. The increase at recreational and school uses would be below the 10 in 1 million threshold at each location. Therefore, the impact on sensitive receptors (residential uses) near existing emission sources would be significant.

For new sensitive receptors in new land uses, the incremental risk at the maximally exposed sensitive receptors exceeds the threshold at residential receptors. The threshold is exceeded at various residential receptors within each modeling subdomain due to siting of new residential uses near rail and roadway sources. Risk exceeds the 10 in 1 million threshold in a number of locations due to the siting of new land uses. Therefore, the impact on new sensitive receptors in new land uses is significant.

Sensitive receptors exposed to incremental increase in cancer risk above thresholds in 2050 are shown in Figure 4.3-10.



Source: Adapted by Ascent in 2025.

Figure 4.3-10 Cancer Risk Exceedances, 2050

Table 4.3-17 Summary of Cancer Risk, 2050

Receptor Type	2022 Maximum Cancer Risk (per million)	2050 Maximum Cancer Risk (per million)	2050 – 2022 Maximum Incremental Change (per million)	2050 – 2022 Incremental Area of Threshold Exceedance (acres)
Existing Receptors				
Residential	255	89	33	56
Recreational	41	16	2	0
School	50	20	3	0
New Receptors				
Residential	-	114	114	707
Recreational	-	6	6	0
School	-	7	7	0

Source: Appendix C.

Notes: Cancer risk threshold is 10 in 1 million. Modeled cancer risks were rounded to the nearest whole number.

Criterion 2: Does the proposed Plan expose sensitive receptors to total cumulative cancer risks above 100 in one 1 million?

Table 4.3-18 summarizes cumulative health risk at residential sensitive receptors in 2050 relative to 2022 conditions. As shown, the maximum cumulative cancer risk and the number of sensitive receptors in the modeling exposed to 100 per million health risk would decrease. This reduction in exposure is due in part to regulatory policies that reduce emissions from diesel trains and vehicles and gasoline vehicles due to state and federal programs designed to reduce emissions of TACs and improve fuel efficiency. Thus, reductions in the number of exposed individuals would occur despite the proposed Plan's forecasted increase in the population and housing units within the region.

The SCS portion of the proposed Plan includes proposed land use changes that reflect smart growth, transit-oriented development, preserving natural resources and agricultural lands. The Series 15 Forecast and proposed SCS land use pattern reflect a move toward more sustainable urban growth models. Land use growth is proposed for communities with a high concentration of people, destinations, and travel choices where densification is envisioned in the SCS.

Many of these proposed land uses are within areas that are near existing pollution sources. Although the proposed Plan would contribute TAC emissions at both the regional and local scale, these increases would not increase existing hazards, when taking into account the reduction of emissions over time due to regulatory policies.

Table 4.3-18 Summary of Cumulative Health Risk, 2050

Receptor Type	2022 Maximum Cumulative Cancer Risk (per million)	2022 Area of Threshold Exceedance (acres)	2050 Maximum Cumulative Cancer Risk (per million)	2050 Area of Threshold Exceedance (acres)	2050 – 2022 Maximum Incremental Change (per million)	2050 - 2022 Incremental Area of Threshold Exceedance (acres)
Residential	256	34	115	1	-140	-33

Note: Modeled cumulative cancer risks were rounded to the nearest whole number.

A summary of TAC emissions is shown in Table 4.3-19. Overall, TAC emissions reduce 40 to 74 percent relative to 2022 at the scale of the entire Plan area. Despite this reduction in TACs at the regional scale, numerous individual roadways would see an increase in TAC emissions, but the proposed Plan would not increase existing hazards, taking into account the effect of regulatory policies over time. Based on the above analysis, this impact is therefore less than significant.

Table 4.3-19 Summary of TAC Emissions, Tons Per Day, 2050

Pollutant	2022	2050	Change Vs 2022
Butadiene1,3	0.052	0.014	-74%
Acetaldehyde	0.032	0.008	-74%
Acrolein	0.010	0.003	-74%
Benzene	0.204	0.054	-74%
Ethyl Benzene	0.100	0.026	-74%
Formaldehyde	0.137	0.036	-74%
Naphthalene	0.047	0.020	-58%
PAH	0.047	0.020	-58%
DPM	0.034	0.020	-40%

Source: Appendix C.

Criterion 3: Does the proposed Plan result in increases in health risks to sensitive receptors for noncancer hazards as measured by a THI above 1.0?

Table 4.3-20 summarizes non-cancer health effects in 2050 for the three receptor types.

For land uses near existing roadway and rail sources, the incremental noncancer risk at the maximally exposed sensitive receptors is below 2022 conditions. For all residential, park, or school sensitive receptors near existing roadway and rail sources, there are no sensitive receptors that show an increase in chronic hazard index or acute hazard index in 2050 relative to 2022 conditions. Therefore, the impact on sensitive receptors near existing emission sources is less than significant.

For new sensitive receptors in new land uses, the incremental noncancer chronic hazard index at the maximally exposed sensitive receptors exceeds the threshold at residential receptors. The chronic hazard index threshold is exceeded at several residential receptors within the Donovan and Escondido modeling subdomains due to siting of new residential uses near existing rail and roadway sources Therefore, the impact on new sensitive receptors in new land uses is significant for chronic hazard index. There are no exceedances of the acute hazard index threshold.

Sensitive receptors exposed to incremental increase in chronic and acute hazard index above thresholds in 2050 are shown in Figure 4.3-9.

Table 4.3-20 Summary of Non Cancer Hazard Index, 2050

Receptor Type	2022 Maximum Hazard Acute Hazard Index	2022 Maximum Hazard Chronic Hazard Index	2050 – 2022 Maximum Incremental Change Acute Hazard Index	Chronic Hazard Index	Incremental Area Change Threshold Exceeding (acres) Acute Hazard Index	Incremental Area Change Threshold Exceeding (acres) Chronic Hazard Index
Existing Receptors						
Residential	0.62	1.39	0.15	0.63	0	0
Recreational	0.52	0.07	0.13	0.02	0	0
School	0.59	0.19	0.07	0.06	0	0
New Receptors						
Residential	X	X	0.47	2.14	0	1
Recreational	X	X	0.25	0.03	0	0
School	X	X	0.18	0.11	0	0

Source: Appendix C.

Notes: Noncancer hazard risk threshold is 1.0 for both Acute and Chronic Hazards. Modeled noncancer hazard risks were rounded to the nearest two decimal places.

2050 Conclusion

Implementation of the proposed Plan would not expose existing sensitive receptors, but would expose new receptors, to substantial concentrations of TAC emissions. Therefore, this impact is significant in 2050.

Impacts of the Proposed Plan with Future Climate Change

With continued climate change, growth and land use change and transportation network improvements in the region would result in exposure of sensitive receptors to TAC concentrations. Climate change would increase exposure to some carcinogens, such as through particulate matter from wildfire and flooding inundation of chemical or waste sites that may release carcinogens (Nogueira et al. 2020). The proposed Plan's projected growth and transportation network improvements would increase exposure of new receptors to TAC emissions, which could be worsened by climate change-caused increases of these emissions.

MITIGATION MEASURES

AQ-5 EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL TAC CONCENTRATIONS

2035, 2050

Implement mitigation measure **AQ-2a** and **AQ-2b**, as discussed under Impact AQ-2. Mitigation measure **AQ-2a** would reduce TAC emissions from freeway travel.

The following mitigation measures presented in Section 4.8 will further reduce TAC emissions:

- GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions
- GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans
- GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure
- GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects
- GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects

The following mitigation measure presented in Section 4.16 will further reduce TAC emissions by reducing VMT:

- TRA-2: Achieve Further VMT Reductions for Transportation and Development Projects

In addition, the following measure is proposed:

AQ-5a Reduce Exposure to Localized Toxic Air Contaminant Emissions. During planning, design, and project-level CEQA review of transportation network improvements and programs, SANDAG shall, and other transportation project sponsors can and should, evaluate the potential toxic air contaminant (TAC) impacts of the project using applicable procedures and guidelines for such analyses (for example, California Air Pollution Control Officers' Association, OEHHA, and EPA air toxics health risk assessment guidance).

In addition, during planning, design, and project-level CEQA review of development projects, the County of San Diego, cities, and other local jurisdictions can and should apply the above measures, and additional measures to reduce TAC emissions or exposure to TAC emissions, including but not limited to:

- Reduce the potential for TACs to be introduced into buildings by all of the following:
  - Maintaining a positive air pressure within buildings that include sensitive receptors.
  - Achieving a performance standard of at least one air exchange per hour of fresh outside filtered air.
  - Achieving a performance standard of at least 4 air exchanges per hour of recirculation.
  - Achieving a performance standard of at least 0.25 air exchanges per hour of unfiltered air if the building is not positively pressurized.

- Within developments, separate sensitive receptors from truck activity areas, such as loading docks and delivery areas. This measure would reduce exposure of residents and other sensitive receptors by locating sources of TACs associated with loading docks and delivery areas away from sensitive receptors.
- Replace or retrofit existing diesel generators that are not equipped to meet CARB's Tier emission standards.
- Reduce emissions from diesel trucks using the project site through the following measures:
  - Install electrical hook-ups for electric or hybrid trucks at loading docks.
  - Require trucks to use Transportation Refrigeration Units (TRUs) that meet Tier 4 emission standards.
  - Require truck-intensive projects to use advanced exhaust technology (e.g., hybrid) or alternative fuels.
  - Prohibit trucks from idling for more than 2 minutes as feasible.

  This measure would reduce emissions of TACs from trucks and TRUs by reducing operations and requiring them to use electrical hookups.
- Do not locate sensitive receptors in the same buildings as a perchloroethylene dry cleaning facility. This measure would reduce potential exposure of sensitive receptors to perchloroethylene from dry cleaning facilities.
- Maintain a 50-foot buffer from a typical gas dispensing facility (under 3.6 million gallons of gas per year). This measure would reduce potential exposure of sensitive receptors to emissions from gas stations.
- Ensure that private (individual and common) exterior open space, including playgrounds, patios, and decks, is shielded from stationary sources of air pollution by buildings or otherwise buffered to further reduce air pollution exposure for project occupants. This measure would reduce the potential for exposure of residents and other sensitive populations to stationary sources of TAC emissions.

AQ-5b Reduce Exposure to Localized Toxic Air Contaminant Emissions during Railway Design. In order to help reduce localized toxic air contaminant (TAC) concentrations at sensitive receptors near the future proposed railway(s), SANDAG shall require the design of railway tunnels or other approaches to move emissions underground, where feasible, during individual project-level design. Furthermore, individual project-level design of railway tunnels or other underground features shall require that portals, adits, windows, and other venting features are located as far away as feasible from nearby sensitive receptor(s).

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Mitigation measure AQ-2a will help secure incentive funding that will reduce TAC emissions from mobile sources. Mitigation measure AQ-2b will help reduce VMT that will reduce TAC emissions from mobile sources by reducing vehicle travel Mitigation measure AQ-4 will reduce the exposure of sensitive receptors to TAC emissions with the implementation of design measures.

Mitigation measures GHG-4a, GHG-4b, GHG-4c, GHG-4d, and GHG-4e would reduce TAC emissions from tire wear, brake wear, and vehicle exhaust, as discussed in Section 4.8. In addition, mitigation measure TRA-2 would reduce TAC emissions through project-level VMT reduction measures, as discussed in Section 4.16.Measures to reduce VMT or vehicle exhaust (e.g., EVs) in these mitigation measures would reduce TAC emissions and associated concentrations.

Although mitigation would reduce impacts, there is no guarantee that all impacts would be reduced to below a level of significance. Impacts would remain significant for cancer for existing and new sensitive receptors in 2035 and 2050 and chronic health hazard index for new sensitive receptors in 2035 and 2050. Thus, impacts would be significant and unavoidable.

AQ-6 EXPOSE SENSITIVE RECEPTORS TO CARBON MONOXIDE HOT SPOTS

Analysis Methodology

This analysis addresses the exposure of sensitive receptors to substantial concentrations of CO. A CO hot spot is a localized concentration of CO, typically found at congested intersections, that is above the state or national 1-hour or 8-hour ambient air standards for the pollutant. Projects that do not generate CO concentrations in excess of the health-based NAAQS or CAAQS would not contribute a significant level of CO such that localized air quality and human health would be substantially affected.

This analysis qualitatively evaluates proposed Plan CO concentration impacts, including CO hot spots, by comparing them to CO emissions and concentrations disclosed in the 2015 Regional Plan EIR, where no significant CO impacts were found.

Impact Analysis

<u>2035</u>

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Vehicle travel under the proposed Plan is projected to be 81 million VMT per weekday in 2035 (see Tables G.4 and G.5 of Appendix G). Vehicle travel evaluated in the 2015 Regional Plan was projected to be over 90 million VMT per weekday in 2035. Thus, the daily VMT estimate under the proposed Plan is projected to decrease by approximately 9 million VMT daily compared to 2035 projections under the 2015 Regional Plan. Proposed transportation infrastructure and programs within the proposed Plan would help to reduce VMT by providing alternative forms of transportation, including biking, walking, and transit, which would reduce passenger car travel and thereby reduce any exposure to emissions at congested roadways. VMT and overall vehicle use would be lower than assumed in the 2015 Regional Plan.

The 2015 Regional Plan EIR and proposed Plan both modeled CO emissions for the year 2035. According to the 2015 Regional Plan EIR, on-road vehicle sources would be responsible for 71.26 tons per day of CO emissions (2015 Regional Plan EIR Table 4.3-12). As shown in Table 4.3-6, the proposed Plan would emit 149,506 pounds per day (74.75 tons per day) of CO from on-road vehicle sources. Compared to the 2015 Regional Plan EIR, the proposed Plan would emit approximately 3.5 tons per day more of CO emissions, or 5 percent more than the 2015 Regional Plan EIR.

The 2015 Regional Plan EIR analyzed CO concentrations at four congested intersections and found impacts to be well below significance thresholds, even for the existing year 2012. However, as shown in Table 4.3-6, the proposed Plan in 2035 would result in a 112,163 pounds per day (56 tons per day) reduction in CO emissions relative to 2022 conditions. As shown in Table 4.3-3, the highest background CO concentrations are substantially below the relevant CO NAAQS and CAAQS. For instance, the maximum 1-hour CO concentration in 2022 was 2.7 ppm relative to the 20 ppm CAAQS and the 35 ppm NAAQS. Additionally, the maximum 8-hour CO concentration in 2022 was 2.1 ppm relative to the 9.0 ppm CAAQS and the 9 ppm NAAQS. Thus, CO concentrations are currently well below relevant standards, and CO emissions are expected to be substantially lower by 2035.

2035 Conclusion

Implementation of the proposed Plan would not expose sensitive receptors to substantial concentrations of CO in 2035. This impact is less than significant.

<u>2050</u>

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Vehicle travel under the proposed Plan is projected to be 82 million VMT per weekday in 2050 (see Tables G.4 and G.5 of Appendix G). Vehicle travel evaluated in the 2015 Regional Plan was projected to be over 94 million VMT per weekday in 2050. Thus, the daily VMT estimate under the proposed Plan is projected to decrease by approximately 12 million VMT daily compared to 2050 projections under the 2015 Regional Plan. Proposed transportation infrastructure and programs within the proposed Plan would help to reduce VMT by providing alternative forms of transportation, including biking, walking, and transit, which would reduce passenger car travel and thereby reduce any exposure to emissions at congested roadways. VMT and overall vehicle use would be lower than assumed in the 2015 Regional Plan.

The 2015 Regional Plan EIR modeled that on-road vehicle sources CO emissions would be approximately 65.08 tons per day (2015 Regional Plan EIR Table 4.3-16). Furthermore, the 2015 Regional Plan EIR analyzed CO concentrations at four congested intersections and found impacts to be well below significance thresholds for the year 2050. According to Table 4.3- 6, on-road sources within the proposed Plan would emit approximately 121,281 pounds per day (60.91 tons per day) of CO. This would be 4.2 tons per day, or 6 percent less than what was analyzed within the 2015 Regional Plan EIR.

The 2015 Regional Plan EIR analyzed CO concentrations at four congested intersections and found impacts to be well below significance thresholds, even for the existing year 2012. However, as shown in Table 4.3-6, the proposed Plan in 2050 would result in a 140,296 pounds per day (70 tons per day) reduction in CO emissions relative to 2022 conditions. As shown in Table 4.3-3, the highest background CO concentrations are substantially below the relevant CO NAAQS and CAAQS. For instance, the maximum 1-hour CO concentration in 2022 was 2.7 ppm relative to the 20 ppm CAAQS and the 35 ppm NAAQS. Additionally, the maximum 8-hour CO concentration in 2022 was 2.1 ppm relative to the 9.0 ppm CAAQS and the 9 ppm NAAQS. Thus, CO concentrations are currently well below relevant standards, and CO emissions are expected to be substantially lower by 2050.

<u>2050 Conclusion</u>

Implementation of the proposed Plan would not expose sensitive receptors to substantial concentrations of CO in 2050. This impact is less than significant.

<u>Impacts of the Proposed Plan with Future Climate Change</u>

Climate change could increase exposure of sensitive receptors to CO through emissions from wildfires (EPA 2025). However, the proposed Plan's projected growth and transportation network improvements result in reduced, not increased, exposure of sensitive receptors to CO. Climate change-caused increases of CO concentrations would therefore not add to a proposed Plan adverse impact on CO exposure.

MITIGATION MEASURES

No mitigation measures are required for this impact.

AQ-7 RESULT IN OTHER EMISSIONS (SUCH AS THOSE LEADING TO ODORS) ADVERSELY AFFECTING A SUBSTANTIAL NUMBER OF PEOPLE

Analysis Methodology

The proposed Plan would result in significant impacts if it would result in the emission of odors that causes nuisance to a considerable number of persons or to the public. A project that proposes a use that would produce objectionable odors would be deemed to have a significant odor impact if it would affect a considerable number of offsite receptors. Odor sources within the SANDAG region, such as agricultural operations, wastewater treatment facilities, and landfills, are controlled by city and county odor policies enforced by SDAPCD, including SDAPCD Rule 51, which prohibit nuisance odors and identify enforcement measures to reduce odor impacts on nearby receptors.

Impact Analysis

<u>2035</u>

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. Construction of land use development projects could release odors from offroad equipment. Sources of odors from operational activities would include agricultural activities, wastewater treatment plants, food processing plants, chemical plants, composting facilities, landfills, dairies, and fiberglass molding. The regional growth and land use change for 2035 in the proposed Plan does not result in major increases in industrial areas that are likely to include these types of land uses. Activities that would have the potential to result in nuisance odors would be required to comply with applicable odor regulations, including SDAPCD Rule 51, that prevent impacts from being significant. Therefore, regional growth and land use change projects in 2035 would not result in substantial odor emissions or affect a substantial number of people when compared to existing conditions.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line.

Transportation network improvements proposed by 2035 include commuter rail, several rapid bus lines, zero emission bus upgrades, managed lanes along various freeways, and several bikeway and bike facility improvements. Transportation network improvements would be required to comply with applicable odor regulations, including Rule 51, that prevent impacts from being significant. Therefore, transportation network improvements and programs in 2035 would not result in substantial odor emissions or affect a substantial number of people when compared to existing conditions.

2035 Conclusion

Implementation of the proposed Plan would result in a less-than-significant impact related to odor impacts because both development projects and transportation network improvements would be required to comply with applicable odor regulations that prevent impacts from being significant. Odors from these projects would not cause nuisance to a considerable number of persons or to the public, when compared to existing conditions; therefore, this impact (AQ-7) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 “Project Description,” of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. Construction of land use development projects could release odors from offroad equipment. Sources of odors from operational activities would include agricultural activities, wastewater treatment plants, food processing plants, chemical plants, composting facilities, landfills, dairies, and fiberglass molding. The regional growth and land use change for 2050 in the proposed Plan does not result in major increases in industrial areas that are likely to include these types of land uses. Activities that would have the potential to result in nuisance odors would be required to comply with applicable odor regulations, including SDAPCD Rule 51, that prevent impacts from being significant. Therefore, regional growth and land use change projects in 2050 would not result in substantial odor emissions or affect a substantial number of people when compared to existing conditions.

Transportation Network Improvements and Programs

Transportation network improvements proposed by 2050 include commuter rail, several rapid bus lines, zero emission bus upgrades, managed lanes along various freeways, and several bikeway and bike facility improvements. Transportation network improvements would be required to comply with applicable odor regulations, including Rule 51, that prevent impacts from being significant. Therefore, transportation network improvements and programs in 2035 would not result in substantial odor emissions or affect a substantial number of people when compared to existing conditions.

2050 Conclusion

Implementation of the proposed Plan would result in a less-than-significant impact related to odor impacts because both development projects and transportation network improvements would be required to comply with applicable odor regulations that prevent impacts from being significant. Odors from these projects would not cause nuisance to a considerable number of persons or to the public, when compared to existing conditions; therefore, this impact (AQ-7) in the year 2050 is less than significant.

Impacts of the Proposed Plan with Future Climate Change

With continued climate change, growth and land use change and transportation network improvements in the region would likely not result in increased odors. Climate change would not increase odors associated with the proposed Plan assuming land use and transportation projects implementing the proposed Plan that comply with odor regulations.

MITIGATION MEASURES

No mitigation measures are required for this impact.

4.3.5 Cumulative Impacts Analysis

C-AQ-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO AIR QUALITY

Emissions of criteria air pollutants can travel substantial distances and are not confined by jurisdictional boundaries; rather they are influenced by large-scale climatic and topographical features. Thus, the geographic scope considered for cumulative impacts on air quality is the Southern California and northern Baja region.

A projection approach to air quality is appropriate given the air pollutant emissions resulting from the future overall transportation network improvements, increases in population, and necessary planned regional development.

The plans considered and relied on for this cumulative analysis include the Southern California Association of Governments (SCAG) 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and its Final EIR (SCAG 2024); the San Diego Air Pollution Control District (SDAPCD) 2022 Regional Air Quality Strategy Revision (2022 RAQS) (SDAPCD 2022); SDAPCD 2020 San Diego Ozone State Implementation Plan (2020 SIP) (SDAPCD 2020); South Coast Air Quality Management District (SCAQMD) 2022 Air Quality Management Plan (AQMP) (SCAQMD 2022); Imperial County Air Pollution Control District (ICAPCD) Final 2009 8 Hour Ozone Modified Air Quality Management Plan (ICAPCD 2010); U.S. Environmental Protection Agency (EPA) Border 2025 Program, Master Action Plan for California-Baja California (EPA 2021); 2034 Tijuana, Tecate, and Playas de Rosarito Metropolitan Strategic Plan (IMPLAN 2013); and California-Baja California Border Master Plan (Caltrans 2021).

Significant cumulative impacts related to air quality would occur if emissions would conflict with or obstruct implementation of the Regional Air Quality Strategy and/or State Implementation Plan; result in a cumulatively considerable net increase in nonattainment or attainment criteria pollutants, including VOC, NOx, PM_{10}, $PM_{2.5}$, and SOx; result in construction-related emissions above regional mass emission thresholds; expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations; expose sensitive receptors to substantial TAC concentrations; expose sensitive receptors to carbon monoxide hot spots; and result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Impacts of the Proposed Plan

The proposed Plan would result in less-than-significant impacts related to conflicting with or obstructing the implementation of the 2022 RAQS and 2020 SIP (Impact AQ-1). The proposed Plan would result in a cumulatively considerable net increase in respirable particulate matter (PM_{10}) emissions in 2035 and 2050 (Impact AQ-2). In addition, the proposed Plan would result in significant impacts related to construction-related emissions exceeding thresholds (Impact AQ-3) and exposure of sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations in 2035 and 2050 (Impact AQ-4). The proposed Plan would expose new sensitive receptors to substantial toxic air contaminant (TAC) concentrations in 2035 and 2050 (Impact AQ-5). The proposed Plan would result in less-than-significant impacts related to exposure of sensitive receptors to carbon monoxide hot-spots (Impact AQ-6), and result in less-than-significant impacts related to other emissions (such as those leading to odors) adversely affecting a substantial number of people (Impact AQ-7).

Impacts of Projections in Adopted Plans

The 2022 RAQS outlines plans and control measures designed to attain and maintain the state standards. The 2022 RAQS states that air quality progress is occurring within San Diego County, but that current state and federal ozone standards are not yet attained, and continued emission reduction efforts are needed. The report states that both volatile organic compounds (VOC) and nitrogen oxides (NOx) emissions were reduced by larger percentages between 2007 and 2014 than were projected in the 2016 RAQS Revision, and that based on regulatory actions already taken, total VOC and NOx emissions are expected to continue decreasing through 2035 due to ongoing implementation of existing local stationary source rules, as well as state and federal mobile source regulations (SDAPCD 2022).

The 2020 SIP outlines plans and control measures designed to attain and maintain the federal standards. Despite substantial air quality progress, the region did not attain the 2008 O_3 NAAQS (75 parts per billion [ppb]) by the attainment deadline; as a result, EPA reclassified San Diego County as a serious nonattainment area for that standard with a new attainment date of July 20, 2027 (2026 attainment year). Furthermore, the 2020 SIP complies with the severe nonattainment area classification planning requirements and includes demonstrations for attainment of the 2008 and 2015 O_3 NAAQS by 2026 and 2032, respectively. The 2020 SIP includes updated inventories of ozone precursor emissions (VOC and NOX) for the 2017 base year (the year from which future-year inventories are projected) and the 2026 and 2032 attainment years (SDAPCD 2020).

The SCAQMD 2022 AQMP (SCAQMD 2022) states that the air in Southern California is far from meeting all federal and state air quality standards. However, the long-term trend of the quality shows continuous improvement and is the direct result of Southern California's comprehensive, multiyear strategy of reducing air pollution from all sources as outlined in its AQMP. To reach federal Clean Air Act (CAA) deadlines over the next two decades, the AQMP concludes that Southern California must significantly accelerate its pollution reduction efforts. Many of the control measures proposed in the AQMP are not regulatory in form, but instead focus on incentives, outreach, and education to bring about emissions reductions through voluntary participation and behavioral changes needed to complement regulations.

The ICAPCD 8-Hour Ozone Modified AQMP includes emission inventories and also outlines control measures to address who in Imperial County controls emissions. These include the ICAPCD's stationary source control measures, regional transportation control measures, and state strategy, all of which provide the framework for ICAPCD rules that reduce ROG and NOX emissions (ICAPCD 2010).

The U.S.-Mexico Border Environmental Program: Border 2025 includes Goal #1 to reduce air pollution. The plan encourages stakeholders to develop and implement projects that maximize health and environmental benefits from multi-pollutant emissions reductions where available, including at the San Diego/Tijuana binational airshed. Some examples include an improved compliance with vehicle emission standards, and establishment of vehicle inspection and maintenance programs in order to reduce emissions in the border region (EPA 2021).

The 2034 Tijuana, Tecate, and Playas de Rosarito Metropolitan Strategic Plan states that a critical issue for the Baja region is the progressive deterioration of the quality of air that is associated with the number of vehicles and no provision of sustainable transportation (IMPLAN 2013).

The California-Baja California Border Master Plan is a binational comprehensive approach to coordinate planning and delivery of projects at land POEs and transportation infrastructure serving those POEs in the California-Baja California region. The Master Plan does not have an associated environmental analysis document; however, projects included in the Master Plan could have adverse air quality impacts due to temporary construction. Nevertheless, beneficial air quality impacts would result from improved traffic conditions and reduced vehicle idle times at POEs. The plan does identify the need for a comprehensive strategy for border crossings that allows for effective integration of POEs into the municipal environment and states that, in addition to the POE facility itself, complementary actions related to transportation, such as air quality, should be considered (Caltrans 2021).

Cumulative Impacts and Impact Conclusions

2035

A cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan with the impact projections from adopted plans within Southern California and northern Baja California region were significant when considered together, even if not independently significant.

Many of the air quality plans note that air quality across the region has been improving due to implementation of various measures and stricter emission requirements. Nevertheless, given some uncertainty that air quality plans throughout Southern California and northern Baja would all be implemented successfully, and given that the proposed Plan's direct impacts are significant, cumulative air quality impacts would also be significant in 2035 due to the following proposed Plan significant impacts: PM_{10} emissions exceeding thresholds (Impact AQ-2), impacts associated with construction equipment emissions (Impact AQ-3), the exposure of sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations (Impact AQ-4), and exposure of sensitive receptors to TACs (Impact AQ-5). Because the other proposed Plan air quality impacts are less-than-significant—conflicting with the 2022 RAQS and 2020 SIP (Impact AQ-1). exposure of sensitive receptors to carbon monoxide hot-spots (Impact AQ-6), creating other emissions (e.g., odors) adversely affecting a substantial number of people (Impact AQ-7)—and because adopted Plans would not substantially worsen these impacts, these cumulative impacts would not be significant in 2035.

Because cumulative air quality impacts throughout Southern California and northern Baja by 2035 would be significant, and because the proposed Plan's incremental air quality impacts are significant, the proposed Plan's incremental air quality impacts are also cumulatively considerable and thus significant in 2035 (Impact C-AQ-1).

2050

As described above, cumulative air quality impacts would also be significant in 2050 due to the following proposed Plan significant impacts: PM_{10} emissions exceeding thresholds (Impact AQ-2),), impacts associated with exhaust emissions from construction equipment emissions (Impact AQ-3),exposure of sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations (Impact AQ-4, and exposure of sensitive receptors to TACs (Impact AQ-5). Because the other proposed Plan air quality impacts are less-than-significant—conflicting with the 2022 RAQS and 2020 SIP (Impact AQ-1). exposure of sensitive receptors to carbon monoxide hot-spots (Impact AQ-6), creating other emissions (e.g., odors) adversely affecting a substantial number of people (Impact AQ-7)—and because adopted Plans would not substantially worsen these impacts, these cumulative impacts would not be significant in 2050.

Because cumulative air quality impacts throughout Southern California and northern Baja by 2050 would be significant, and because the proposed Plan's incremental air quality impacts are significant, the proposed Plan's incremental air quality impacts are also cumulatively considerable and thus significant in 2050 (Impact C-AQ-1).

MITIGATION MEASURES

C-AQ-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO AIR QUALITY

2035, 2050

As described above, the proposed Plan's significant air quality impacts would be reduced by mitigation measures **AQ-2a** and **AQ-2b** and would be further reduced by mitigation measures **GHG-4a**, **GHG-4b**, **GHG-4c**, **GHG-4d**, **GHG-4e**, and **TRA-2**.

Similar mitigation measures are specified in some of the other regional plans, such as the SCAG 2024-2050 RTP/SCS EIR. However, that EIR concluded that even with implementation of mitigation measures, some direct air quality impacts would remain significant. Regional air quality planning documents provide short- and long-term strategies for reducing air pollution and control measures to be implemented by applicable jurisdictions and agencies to further reduce air pollutant emissions.

As described in Section 4.3, mitigation measures **AQ-2a**, **AQ-2b, GHG-4a**, **GHG-4b**, **GHG-4c**, **GHG-4d**, **GHG-4e,** and **TRA-2** would not reduce the proposed Plan's incremental impacts to less than significant. Therefore, the proposed Plan's incremental contributions to cumulative air quality impacts in years 2035 and 2050 would remain cumulatively considerable post-mitigation.

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