4.3 AIR QUALITY

This section describes the ambient air quality of Tulare County, provides a comparison of existing air quality to applicable federal, state, and local air pollutant standards, identifies the plans and policies developed in efforts to improve air quality, and evaluates air quality impacts associated with the 2018 RTP/SCS. In addition, this PEIR provides mitigation measures for subsequent, site-specific environmental review documents prepared by lead agencies to reduce identified impacts. Residual impacts after mitigation are identified. Sources utilized in this section include air quality data from the San Joaquin Valley Air Pollution Control District (SJVAPCD), the California Air Resources Board (CARB), and the US Environmental Protection Agency (USEPA). Note that GHG emissions impacts are discussed separately in **Section 4.6.**

4.3.1 ENVIRONMENTAL SETTING

4.3.1.1 Pollutants and Effects

Criteria air pollutants are defined as pollutants for which the federal and State governments have established ambient air quality standards for outdoor concentrations. The federal and State standards have been set at levels above which concentrations are harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter 2.5 microns or less in diameter (PM2.5), particulate matter ten microns or less in diameter (PM10), and lead (Pb). These pollutants are discussed below.

- Carbon Monoxide (CO) is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. It is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, automobile exhaust accounts for the majority of emissions. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient concentrations generally follow the spatial and temporal distributions of vehicular traffic. Concentrations are influenced by local meteorological conditions, primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February. Inversions are an atmospheric condition in which a layer of warm air traps cooler air near the surface of the earth, preventing the normal rising of surface air. The highest concentrations occur during the colder months of the year when inversion conditions are more frequent. CO is a health concern because it competes with oxygen, often replacing it in the blood and reducing the blood's ability to transport oxygen to vital organs. Excess CO exposure can lead to dizziness, fatigue, and impair central nervous system functions.

- Ozone (O_3) is a colorless gas that is formed in the atmosphere when reactive organic gases (ROG) and nitrogen oxides (NO_X) react in the presence of ultraviolet sunlight. O_3 is not a primary pollutant; rather, it is a secondary pollutant formed by complex interactions of two pollutants directly emitted

into the atmosphere. The primary sources of ROG and NO_X, the components of O_3, are automobile exhaust and industrial sources. Meteorology and terrain play major roles in O_3 formation. Ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. The greatest source of smog-producing gases is the automobile. Short-term exposure (lasting for a few hours) to O_3 can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes.

- Nitrogen Dioxide (NO_2), like O_3, is not directly emitted into the atmosphere, but is formed by an atmospheric chemical reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_X, and are major contributors to O_3 formation. NO_2 also contributes to the formation of PM10. High concentrations of NO_2 can cause breathing difficulties and result in a brownish-red cast to the atmosphere with reduced visibility. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase of bronchitis in children (2-3 years old) has been observed at concentrations below 0.3 parts per million (ppm).

- Sulfur Dioxide (SO_2) is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Main sources of SO_2 are coal and oil used in power plants and industries. Generally, the highest levels of SO_2 are found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 can also yellow plant leaves and erode iron and steel.

- Particulate Matter (PM) consists of small liquid and solid particles floating in the air, and can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. The solid particles that contribute to PM include smoke, soot, dust, salts, acids, and metals. Fine particulate matter, or PM2.5, is roughly 1/28 the diameter of a human hair, and results from fuel combustion (in motor vehicles, power generation, industrial facilities), residential fireplaces, and wood stoves. PM2.5 can be formed in the atmosphere from gases such as SO_2, NO_X, and volatile organic compounds (VOC). PM10, also referred to as inhalable particulate matter, is about 1/7 the thickness of a human hair. Major sources of PM10 include: crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions.

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

- PM2.5 and PM10 can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. In some cases, the particles can cause infectious diseases. For example, inhalation of spores can cause San Joaquin Valley Fever (formally known as Coccidioidomycosis), an infectious disease caused by the fungus Coccidioides immitis. Infection is caused by inhalation of Coccidioides immitis spores that have become airborne when dry, dusty soil or dirt is disturbed by wind, construction, farming, or other activities. The Valley Fever fungus tends to be found at the base of hillsides, in virgin, undisturbed soil and is found in the southwestern United States.[1]

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

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

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

4.3.1.2 Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups who utilize the land, and the activities involved. CARB has identified the following typical groups who are most likely to be affected by air pollution: children; the elderly; athletes; and people with cardiovascular and chronic respiratory diseases.[2] Sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, hospitals, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. Residential uses are primarily located in the urban centers of Visalia, Farmersville, Dinuba, and Porterville.

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1 Centers for Disease Control and Prevention, *Coccidioidomycosis (Valley Fever).* https://www.cdc.gov/niosh/topics/valleyfever/default.html. Last updated February 24, 2017. Accessed April 17, 2018.

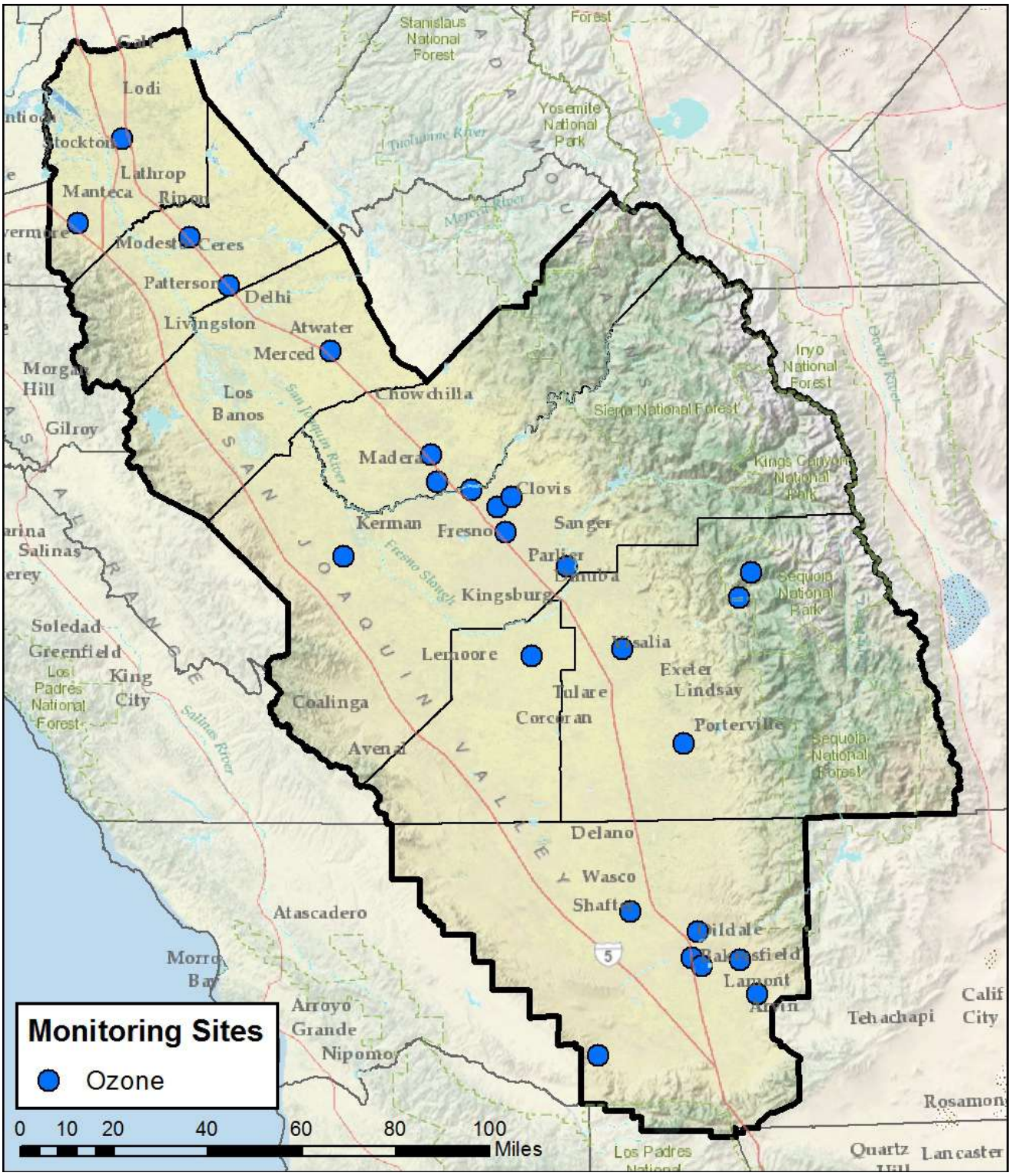
2 California Air Resources Board, *Air Quality and Land Use Handbook: A Community Health Perspective. April 2005.*

4.3.1.3 Regional Air Quality

Tulare County is in the San Joaquin Valley Air Basin (SJVAB), one of the most polluted air basins in the country.[3] **Figure 4.3-1, San Joaquin Valley Air Basin Boundary Map,** shows the boundary of the air basin. The air basin is bordered on the east by the Sierra Nevada range, on the west by the Coast Ranges, and on the south by the Tehachapi Mountains. These features restrict air movement through and out of the SJVAB.

Air quality is affected by the rate and location of pollutant emissions and by climatic conditions that influence the movement and dispersion of pollutants. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients, along with local and regional topography, provide the links between air pollutant emissions and air quality. In Tulare County, which is located within the larger San Joaquin Valley Air Basin, surrounding mountains to the west, south, and east constrain the movement of air and dispersion of pollutants.[4] Restricted mixing and low wind speeds are generally associated with higher pollutant concentrations. These conditions are typically related to temperature inversions (temperature increase with height) which trap pollutants at lower elevations.

3 Tulare County, Chapter 9 Air Quality, Tulare County General Plan 2030 Update, August 2012.



SOURCE: San Joaquin Valley Air Pollution Control District, 2016

FIGURE **4.3-1**

IMPACT SCIENCES

San Joaquin Valley Air Basin Boundary Map

In the San Joaquin Valley Air Basin, inversions form throughout the summer and winter. One way for this to occur is on clear winter nights, when the ground loses heat at a rapid rate, cooling the ground off and radiating the heat into the air. As the ground cools, the air in contact with it cools as well. Inversion layers are significant to meteorology because they block atmospheric flow, which causes the air over an area experiencing an inversion to become stable. In areas with unhealthy air or high rates of air pollution, an inversion can trap pollutants at ground level causing higher concentrations than under normal conditions (in whichwhen pollutants would tend to disperse due to air flow patterns).

Unlike other air basins in California, the pollution in the San Joaquin Valley Air Basin (SJVAB) is not produced by large urban areas. Instead, emissions are generated by many-moderate sized communities and rural uses. Vehicle emissions are a major source of emissions in the SJVAB. Correspondingly, transportation corridors such as I-5 and SR 99 are generating a significant amount of emissions. Emission levels in the Central Valley have been decreasing overall since 1990. This can be primarily attributed to motor vehicle emission controls that reduce the amount of vehicle emissions and controls on industrial/stationary sources. In spite of these improvements, the San Joaquin Valley is still identified as having some of the worst air quality in the nation.[5]

The main source of CO and NOx emissions is motor vehicles. The major contributors to ROG emissions are mobile sources and agriculture. ROG emissions from motor vehicles have been decreasing since 1985 due to stricter standards, even though the vehicle miles have been increasing. Stationary source regulations implemented by the SJVAPCD have also substantially reduced ROG emissions. ROG from natural sources (mainly from trees and plants) is the largest source of this pollutant in Tulare County. Atmospheric modeling accomplished for recent ozone planning efforts has found that controlling NOx is more effective at reducing ozone concentrations than controlling ROG. However, controls meeting Reasonably Available Control Technology (RACT) and Best Available Control Technology (BACT) are still required for SJVAPCD plans.[6,7]

[5] Ibid.

[6] Ibid.

Ozone, classified as a "regional" pollutant, often occurs downwind of the original source of precursor emissions. Ozone can be easily transported by winds from a source area. Peak ozone levels tend to be higher in the southern portion of the Valley, as the prevailing summer winds sweep precursors downwind of northern source areas before concentrations peak. As described below, the USEPA and CARB designate air basins as in attainment or nonattainment for several pollutants, including ozone. The separate designations reflect the fact that the movement of ozone precursors depends on daily meteorological conditions.

The SJVAB has been ranked the 2nd worst in the United States for O3 levels, even though data shows that overall O3 has decreased between 1982 and 2001. Direct PM10 emissions have decreased between the years 1975 and 1995 and have remained relatively constant since 2000. The main sources of PM10 in the SJVAB are from vehicles traveling on unpaved roads and agricultural activities. MPOs must implement Best Available Control Measures (BACM) for sources of fine particulate matter (PM10) to comply with federal attainment planning requirements for PM10.[8,9]

4.3.1.4 Toxic Air Contaminants (TACs)

In addition to criteria pollutants, CARB periodically assesses the health impacts and ambient levels of TACs, also referred to as hazardous air pollutants (HAPs), in California. The USEPA also assesses health impacts for hazardous air pollutants. A TAC is defined by California Health and Safety Code section 39655:

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7 Reasonable Available Control Technologies are devices, systems, process modifications, or other apparatus or techniques that are reasonably available, taking into account: the necessity of imposing such controls in order to attain and maintain a national ambient air quality standard; the social environmental, and economic impact of such controls; and alternative means of providing for attainment and maintenance of such a standard. Best Available Control Technologies are the most stringent emission limitation or control technique of the following: 1. Achieved in practice for such category and class of source 2. Contained in any State Implementation Plan approved by the EPA for such category and class of source. A specific limitation or control technique shall not apply if the owner of proposed emissions unit demonstrates to the satisfaction of the air pollution control officer (APCO) that such a limitation or control technique is not presently achievable 3. Contained in an applicable federal New Source Performance Standard or 4. Any other emission limitation or control technique, including process and equipment changes of basic or control equipment, found by the APCO to be cost effective and technologically feasible for such class or category of sources or for a specific source. Source: Tulare County General Plan, *Air Quality Element*, August 2012.

8 Ibid.

9 Best Available Control Measures is a set of programs that identify and implement potentially best available control measures affecting local air quality issues. Source: Tulare County General Plan, *Air Quality Element*, August 2012.

> *"Toxic air contaminant" means an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. A substance that is listed as a hazardous air pollutant pursuant to subsection (b) of Section 112 of the federal act (42 USC. Sec. 7412(b)) is a toxic air contaminant.*

TACs are also defined as an air pollutant that may increase a person's risk of developing cancer and/or other serious health effects; however, the emission of a toxic chemical does not automatically create a health hazard. Other factors, such as the amount of the chemical, its toxicity and how it is released into the air, the weather, and the terrain, all influence whether the emission could be hazardous to human health. TACs are emitted by a variety of industrial processes, such as petroleum refining, electric utility, and chrome plating operations, and commercial operations such as gasoline stations, dry cleaners, and motor vehicle exhaust, and may exist as PM10 and PM2.5 or as vapors (gases). TACs include metals, other particles, gases absorbed by particles, and certain vapors from fuels and other sources.

The emission of toxic substances into the air can be damaging to human health and to the environment. Human exposure to these pollutants at sufficient concentrations and durations can result in cancer, poisoning, and rapid onset of sickness, such as nausea or difficulty in breathing. Other less measurable effects include immunological, neurological, reproductive, developmental, and respiratory problems. Pollutants deposited onto soil or into lakes and streams affect ecological systems and eventually human health through consumption of contaminated food. The carcinogenic potential of TACs is a particular public health concern because many scientists currently believe that there is no "safe" level of exposure to carcinogens. Any exposure to a carcinogen poses some risk of contracting cancer.

The State Air Toxics Program (created by AB 2588 of 1987) identified over 200 TACs, including the 189 TACs originally identified in the federal Clean Air Act.[10] The USEPA has assessed this expansive list of toxics and identified 21 TACs as Mobile Source Air Toxics (MSATs). MSATs are compounds emitted from highway vehicles and nonroad equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline. USEPA also extracted a subset of these 21 MSAT compounds that it now labels as the six priority MSATs: benzene, formaldehyde, acetaldehyde, diesel particulate matter (DPM)/diesel exhaust organic gases, acrolein, and 1,3-butadiene. While these six MSATs are considered the priority transportation toxics, USEPA stresses that the lists are subject to change and may be adjusted in future rules.[11] USEPA has issued a number of regulations that will

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10 CARB, *Final Staff Report: Update to the Toxic Air Contaminant List*. December 1999.

11 FHWA, *Memorandum. Information: Updated Interim Guidance on Air Toxic Analysis in NEPA Documents*, October 18, 2016.

dramatically decrease MSATs through cleaner fuels and cleaner engines. According to an FHWA analysis, even if the number of vehicle miles traveled increases by 45 percent, a reduction of 91 percent in MSATs is still projected from 2010 to 2050.[12]

As mentioned above, California law defines TACs as air pollutants having carcinogenic or other health effects. A total of 245 substances have been designated TACs under California law; they include the federal Hazardous Air Pollutants (HAPs) adopted as TACs in accordance with Assembly Bill 2728. The Air Toxics "Hot Spots" Information and Assessment Act of 1987, (AB 2588), seeks to identify and evaluate risk from air toxics sources; AB 2588 does not regulate air toxics emissions directly. Under AB 2588, sources emitting more than 10 tons per year of any criteria air pollutant must estimate and report their toxic air emissions to the local air districts. Local air districts then prioritize facilities on the basis of emissions, and high priority facilities are required to submit a health risk assessment and communicate the results to the affected public. Depending on risk levels, emitting facilities are required to implement varying levels of risk reduction measures.

The California-specific transportation air quality analysis model, EMFAC, is designed to model MSATs, including DPM, at the project level. Health effects from MSATs/TACs from on-road traffic, which include both, cancer risks and chronic non-cancer risks, have been associated primarily with DPM, benzene, and 1,3-butadiene. EMFAC can be used to estimate DPM, benzene, and 1,3-butadiene emissions. In addition to DPM, benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, paradichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest existing ambient TAC risk, for which data are available, in California. DPM poses the greatest health risk among these ten TACs mentioned.[13]

Diesel Particulate Matter (DPM)

According to the 2013 California Almanac of Emissions and Air Quality, the majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from the exhaust of diesel-fueled engines. DPM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances.[14]

Diesel exhaust is composed of two phases, gas and particle, and both phases contribute to the health risk. The gas phase is composed of many of the hazardous air pollutants typically found in urban areas, such

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12 Ibid.

13 South Coast Air Quality Management District, *Mates IV Final Report Multiple Air Toxics Exposure Study in the South Coast Air Basin*. May 2015.

14 CARB, *The California Almanac of Emissions and Air Quality 2013 Edition*. 2013.

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 or composition. Fine and ultra-fine 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. Diesel exhaust is emitted from a broad range of diesel engines: the on-road diesel engines of trucks, buses, and cars; and the off-road diesel engines that include locomotives, marine vessels, and heavy duty equipment. Although DPM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

The most common exposure to DPM is breathing the air that contains DPM. The fine and ultra-fine particles are respirable (similar to PM2.5), which means that they can avoid many of the human respiratory system defense mechanisms and enter deeply into the lung. Exposure to DPM comes from both on-road and off-road engine exhaust that is either directly emitted from the engines or 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 depends upon several factors, including the amount of chemical exposure and the duration of exposure. Individuals also react differently to different levels of exposure. There is limited information on exposure to just DPM, but there is enough evidence to indicate that inhalation exposure to diesel exhaust causes acute and chronic health effects.[15]

Acute exposure to diesel exhaust may cause irritation to the eyes, nose, throat, and lungs, as well as some neurological effects such as lightheadedness. Acute exposure may also elicit a cough or nausea as well as exacerbate asthma. Chronic exposure to DPM in experimental animal inhalation studies has shown a range of dose-dependent lung inflammation and cellular changes in the lung and immunological effects. Based upon human and laboratory studies, there is considerable evidence that diesel exhaust is a likely carcinogen. Human epidemiological studies demonstrate an association between diesel exhaust exposure and increased lung cancer rates in occupational settings.[16]

USEPA's National Scale Assessment uses several types of health hazard information to provide a quantitative "threshold of concern" or a health benchmark concentration at which it is expected that no adverse health effects occur at exposures to that level. Health effects information on carcinogenic, short- and long-term non-carcinogenic endpoints are used to establish selective protective health levels to

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15 USEPA, *Health Assessment Document for Diesel Engine Exhaust.* May 2002.

16 USEPA, *Integrated Risk Information System Chemical Assessment Summary: Diesel Engine Exhaust*. 2003. *https://cfpub.epa.gov/ncea/iris2/chemicalLanding.cfm?substance_nmbr=642*.

compare to the modeled exposure levels. Unfortunately, the exposure response data in human studies are considered too uncertain to develop a carcinogenic unit risk for USEPA's use. There is a Reference Concentration (RFC) that is used as a health benchmark protective of chronic non-carcinogenic health effects, but it is for diesel exhaust and not specifically set for DPM.[17]

Health Studies

As discussed above, vehicle emissions contain a number of substances that can be harmful, including TACs such as benzene and diesel PM. A growing body of scientific evidence shows that living or going to school near roadways with heavy traffic volumes is associated with a number of adverse effects. These include increased respiratory symptoms, increased risk of heart and lung disease, and elevated mortality rates.[18] While most of the initial studies were conducted in Europe, a number of research projects conducted in the United States and California are finding similar results.

Children's Health Study. For example, as of 2005, the *Children's Health Study*, a ten-year study conducted by the University of Southern California School of Medicine, found strong evidence that exposure to pollutants related to vehicle emissions such as NO_2 and elemental carbon (or soot) is linked to a slowing of lung function growth. The researchers concluded that the resulting deficits in lung function are likely permanent and may increase the risk for respiratory and other diseases later in life. The study also found that the children in the study who lived nearest to roadways with heavy traffic, such as freeways, showed increased risk for having asthma.[19]

The East Bay Children's Respiratory Health Study. The East Bay Children's Respiratory Health Study, conducted in 2001, included more than 1,100 students between the 3rd and 5th grades.[20] The study included ten neighborhoods with school sites located upwind and downwind from major roads. The San Francisco Bay area has strong prevailing winds, and this study found that downwind direction and proximity to major roads was an important determinant of increased exposure to traffic pollutants. This study found higher concentrations of black carbon, oxides of nitrogen, and nitrogen oxide at schools located downwind from freeways as compared with those schools upwind or farther from major traffic sources.

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17 USEPA. 2017. National Air Toxics Assessment, Available online at: https://www.epa.gov/national-air-toxics-assessment, accessed April 24, 2018.

18 SCAQMD, *Traffic Pollutants and Health Effects*. May 20, 2005.

19 *Ibid*.

20 ARB, *The East Bay Children's Health Study; Traffic-Related Air Pollution Near Busy Roads*, June 7, 2004.

For children residing at their current address for at least one year, investigators found a modest but significant increase of five to eight percent in bronchitis and asthma symptoms in children in neighborhoods with higher concentrations of traffic pollutants.

California Office of Environmental Health Hazard Assessment (OEHHA) School Study. The OEHHA studied public schools in California, various socioeconomic factors, and their proximity to major roads. The study found that about two percent of all the public schools in California, incorporating about 150,000 students, are within 150 meters (500 feet) of a very busy roadway.[21] The study also provided recommendations on ways to mitigate exposure of students to traffic-related pollutants in the event that a school is located near busy roadways.

Air Quality and Land Use Handbook. The studies described in the above paragraphs, along with other similar studies, were considered by CARB in the preparation of the publication, *Air Quality and Land Use Handbook: A Community Health Perspective*.[22] In the discussion of traffic emissions and health effects, the key health findings included the following:

- Reduced lung function in children was associated with traffic density, especially trucks, within 1,000 feet and the association was strongest within 300 feet;
- Increased asthma hospitalizations were associated with living within 650 feet of heavy traffic and heavy truck volume;
- Asthma symptoms increased with proximity to roadways and the risk was greatest within 300 feet;
- Asthma and bronchitis symptoms in children were associated with proximity to high levels of traffic in a San Francisco Bay Area community with good overall regional air quality; and
- A San Diego study found increased medical visits in children living within 550 feet of heavy traffic.

The CARB concludes their analysis with the following recommendation: Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.

Childhood Asthma. A study published in 2006 examined the relationship of residence near a freeway and susceptibility to childhood asthma.[23] This study found residence within 75 meters (245 feet) of a major road was associated with an increased risk of lifetime asthma, prevalent asthma, and wheeze. The higher risk of asthma near a major road decreased to background rates at 150 to 200 meters (490 to 655 feet) from

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21 OEHHA, *The East Bay Children's Respiratory Health Study*, May 2004.

22 ARB, *Air Quality and Land Use Handbook: A Community Health Perspective*, April 2005.

23 McConnell, R., K. Berhane, L. Yao, M. Jerrett, F. Lurmann, F. Gilliland, N. Kunzli, J. Gauderman, E. Avol, D. Thomas, and J. Peters, *Traffic, Susceptibility, and Childhood Asthma*, 2006.

the road. In children with a parental history of asthma and in children moving to the residence after two years of age, there was no increased risk associated with exposure. A similar pattern of effects was observed with traffic-modeled exposure. These results indicate that residence near a major road is associated with asthma.

Traffic and Lung Development. A February 2007 study, Effect of Exposure to Traffic on Lung Development from 10 to 18 Years of Age: A Cohort,[24] examined the pulmonary function of more than 3,500 children over a period of eight years. The studies were conducted in 12 California communities. Health effects related to distance from freeways were divided into three groups: less than 500 meters (1,640 feet) from the freeway, 500 to 1,500 meters (1,640 to 4,920 feet) from the freeway, and greater than 1,500 meters (4,920 feet) from the freeway.

The study shows that the residential proximity to freeway traffic is associated with substantial deficits in lung-function development in children. The effects were greater for those children who lived within 500 meters (1,640 feet) of a freeway than for those who lived at least 1,500 meters (4,920 feet) from a freeway. Since lung development is nearly complete by age 18 years, an individual with a deficit at this time will probably continue to have less than healthy lung function for the remainder of his or her life. The study did not find any evidence that traffic effects varied depending on background air quality, which suggests that even in an area with low regional pollution, children living near a major roadway are at increased risk of health effects. The results also suggest that children who live close to a freeway in a high pollution area experience a combination of adverse developmental effects because of both local and regional pollution.

Particulates at a Sacramento School Site. A multi-year study in the Sacramento area, described in a 2006 report, analyzed atmospheric particulate matter at a school site downwind of a busy secondary road.[25] The study was not a health effects study. The study is of interest for the following reasons: (1) The study indicates that exhaust from automobiles may be a greater source of toxic pollutants than diesel exhaust, and (2) a barrier of dense vegetation can be one element in a pollutant mitigation strategy. The study also emphasizes that the most important mitigation for exposure near roadways is the distance from the road to the receptor.

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24 Gauderman, W. J., H. Vora, R. McConnell, K. Berhane, F. Gilliland, D. Thomas, F. Lurmann, E. Avol, N. Kunzli, M. Jerrett, and J. Peters, *Effect of Exposure to Traffic on Lung Development from 10 to 18 Years of Age: A Cohort Study*, The Lancet, Volume 369. February 17, 2007.

25 Cahill, T. A., *Vehicular Exposures and Potential Mitigations Downwind of Watt Avenue, Sacramento, CA. Report to The Health Effects Task Force, Breathe California of Sacramento-Emigrant Trails*, 2006.

4.3.2 REGULATORY FRAMEWORK

Air quality in Tulare County is addressed through the efforts of various federal, state, regional, and local government agencies. The agencies primarily responsible for improving the air quality within the County include the USEPA, CARB, SJVAPCD, and TCAG. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies primarily responsible for improving the air quality within Tulare County are discussed below, along with their individual responsibilities.

Mobile emission sources are regulated through the establishment of Federal and State vehicle emission requirements with which auto manufacturers must comply. Motor vehicle emissions are also regulated by the State's vehicle inspection and maintenance program (the "Smog Check Program"). Indirectly, increases in motor vehicle emissions can be regulated by agencies other than CARB through CEQA.

4.3.2.1 Federal

US Environmental Protection Agency and Clean Air Act

The USEPA is responsible for implementing the federal Clean Air Act, as amended (42 USC 7401 *et seq.*), which requires it to set National Ambient Air Quality Standards (NAAQS). These standards identify levels of air quality for seven "criteria" pollutants: O_3, CO, NO_2, SO_2, PM10, PM2.5, and lead. The NAAQS are considered to be the maximum concentration of ambient (background) air pollutants determined safe to protect the public health and welfare with an adequate margin of safety.

The Clean Air Act requires each state with areas that do not meet the NAAQS to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs, within the time frame identified in the SIP. Note that an SIP is not a single document, but rather a collection of documents including technical reports, district rules, state regulations, programs, and air quality management plans (AQMPs). AQMPs are developed by the local air districts to ensure local compliance with the aims of the SIP, and become part of the SIP once submitted and approved. Consequently, compliance with the applicable SIP ensures compliance with the AQMP as well.

The USEPA designates air basins as being in attainment or nonattainment for each of the seven criteria pollutants. Nonattainment air basins for ozone are further ranked (marginal, moderate, serious, severe, or extreme) according to the degree of nonattainment. CARB is required to describe in its SIP how the state will achieve federal standards by specified dates for each air basin that has failed to attain a NAAQS for

any criteria pollutant. The extent of a given SIP depends on the severity of the air quality condition within the state or a specific air basin. (See discussion of Ambient Air Quality Standards below.)

Under Title III of the Clean Air Act,USEPA 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" (also called HAPs, since modified to 187 pollutants), directs USEPA to identify sources of the HAPs, and establishes a 10-year time period for USEPA to issue technology-based emissions standards for each source category. Emission standards have been developed for all of the stationary source categories under 40 CFR Part 63. Title III of the CAA provides for a second phase under which USEPA is to assess residual risk after the implementation of the first phase of standards and impose new standards, when appropriate, to protect public health. The Risk and Technology Review (RTR) is a combined effort to evaluate both risk and technology as required by the CAA after the application of maximum achievable control technology (MACT) standards.

USEPA has issued a number of regulations that require decreases in mobiles source air toxics (MSAT emissions) from specified fuels and engines. These regulations include USEPA's fuel program (40 CFR Part 83), which requires that refiners must meet an annual average gasoline benzene content standard of 0.62 percent by volume on all of their gasoline nationwide. In addition, USEPA's mobile source program (40 CFR Parts 85 and 86) regulates tailpipe emissions from mobile sources, including in-use and new vehicles. These include regulations addressing emissions from new light-duty vehicles, light-duty trucks, and heavy-duty engines (40 CFR Part 86, Subparts A and B) and motorcycles (40 CFR Part 86, Subparts E and F). The regulations also specify test procedures for the testing of mobile source engines.

Transportation Conformity

Transportation conformity is required under Clean Air Act section 176(c) to ensure that federally supported highway and transit project activities are consistent with ("conform to") the purpose and requirements of the SIP. Conformity currently applies to areas that are designated non-attainment, and those re-designated to attainment after 1990 ("maintenance areas" with plans developed under CAA section 175A) for the following transportation-related criteria pollutants: ozone, particulate matter (PM2.5 and PM10), CO, and NO_2. Conformity to the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS. The transportation conformity regulation is found in 40 CFR Part 93, Subpart A. Transportation conformity is analyzed by a forecasting and modeling process considering population growth, employment growth, trip generation, trip distribution, mode choice, and highway and transit assignment.

Motor vehicle emissions are then modeled, and conformity is demonstrated by showing that emissions would be within the emissions limits ("budgets") established by the SIP.

Conformity also requires reporting on the timely implementation of Transportation Control Measures (TCMs) , thus reinforcing the link between AQMP/SIPs and the transportation planning process. TCMs are expected to be given funding priority and to be implemented on schedule.

4.3.2.2 State

California Air Resources Board and California Clean Air Act

The California Air Resources Board (CARB) oversees air quality planning and control throughout California. It is primarily responsible for ensuring the implementation of the California Clean Air Act (CCAA) California Health and Safety Code Section 39000 *et seq.*), responding to the federal Clean Air Act planning requirements applicable to the state, and regulating emissions from motor vehicles and consumer products within the state. In addition, CARB also sets health-based air quality standards and control measures for toxic air contaminants (TACs).. Under the federal Clean Air Act, CARB has the authority to establish more stringent standards for vehicles sold in California and for various types of equipment available commercially. It also sets fuel specifications to further reduce vehicular emissions.[26]

The California Clean Air Act established a legal mandate for air basins to achieve the California ambient air quality standards (CAAQS) by the earliest practical date. These standards apply to the same seven criteria pollutants as the federal Clean Air Act, and also include sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride. The state standards are generally more stringent than the federal standards, and in the case of PM10 and SO_2, far more stringent.

CARB supervises and supports the regulatory activities of local air quality districts, as well as monitors air quality itself. Health and Safety Code section 39607(e) requires CARB to establish and periodically review area designation criteria. These designation criteria provide the basis for CARB to designate areas of the state as attainment, nonattainment, or unclassified according to state standards. CARB makes area designations for 10 criteria pollutants: O_3, CO, NO_2, SO_2, PM10, PM2.5, sulfates, lead, hydrogen sulfide,

26 USEPA, *Vehicle Emissions California Waivers and Authorizations*. https://www.epa.gov/state-and-local-transportation/vehicle-emissions-california-waivers-and-authorizations. Accessed April 17, 2018.

and visibility-reducing particles.[27] Air quality of a region is considered to be in attainment of the state standards if the measured ambient air pollutant levels for O_3, CO, NO_2, PM10, PM2.5, SO_2 (1- and 24-hour), and lead are not exceeded, and all other standards are not equaled or exceeded at any time in any consecutive three-year period.

California Diesel Risk Reduction Plan

CARB identified particulate emissions from diesel-fueled engines (DPM) TACs in August 1998. Following the identification process, CARB was required by law to determine if there is a need for further control, which led to the risk management phase of the program.

For the risk management phase, CARB formed the Diesel Advisory Committee to assist in the development of a risk management guidance document and a risk reduction plan. With the assistance of the Advisory Committee and its subcommittees, CARB developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* and the *Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines*. The Diesel Advisory Committee approved these documents on September 28, 2000, paving the way for the next step in the regulatory process: the control measure phase.[28,29]

During the control measure phase, specific Statewide regulations designed to further reduce DPM emissions from diesel-fueled engines and vehicles have and continue to be evaluated and developed. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce DPM emissions.

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27 California Air Resources Board, "Area Designations Maps (State and National)," http://www.arb.ca.gov/desig/adm/adm.htm. 2013. According to California Health and Safety Code, Section 39608, "state board, in consultation with the districts, shall identify, pursuant to subdivision (e) of Section 39607, and classify each air basin which is in attainment and each air basin which is in nonattainment for any state ambient air quality standard." Section 39607(e) states that the State shall "establish and periodically review criteria for designating an air basin attainment or nonattainment for any state ambient air quality standard set forth in Section 70200 of Title 17 of the California Code of Regulations. California Code of Regulations, Title 17, Section 70200 does not include vinyl chloride; therefore, CARB does not make area designations for vinyl chloride.

28 CARB, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.* October 2000.

29 CARB, *Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines.* October 2000.

CARB Air Quality and Land Use Handbook

In April 2005, the California Air Resources Board published the *Air Quality and Land Use Handbook* as an informational and advisory guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. See description in the "Health Studies" section above.

California Air Toxics Program

CARB's Statewide comprehensive air toxics program was established in the early 1980s. The Toxic Air Contaminant Identification and Control Act created California's program to reduce exposure to air toxics. Under the Toxic Air Contaminant Identification and Control Act (Chapter 1047, Statutes of 1983), CARB is required to use certain criteria in the prioritization for the identification and control of air toxics. In selecting substances for review, CARB must consider criteria relating to "the risk of harm to public health, amount or potential amount of emissions, manner of, and exposure to, usage of the substance in California, persistence in the atmosphere, and ambient concentrations in the community" [Health and Safety Code Section 39666(f)]. The Toxic Air Contaminant Identification and Control Act also requires CARB to use available information gathered from the Air Toxics "Hot Spots" Information and Assessment Act program to include in the prioritization of compounds.

California has established a two-step process of risk identification and risk management to address the potential health effects from air toxic substances and protect the public health of Californians.[30] In the first step (identification), CARB and the Office of Environmental Health Hazard Assessment (OEHHA) determine if a substance should be formally identified as a TAC in California. During this process, CARB and the OEHHA staff draft a report that serves as the basis for this determination. CARB staff assesses the potential for human exposure to a substance and the OEHHA staff evaluates the health effects. After CARB and the OEHHA staff hold several comment periods and workshops, the report is then submitted to an independent, nine-member Scientific Review Panel (SRP), which reviews the report for its scientific accuracy. If the SRP approves the report, they develop specific scientific findings, which are officially submitted to CARB. CARB staff then prepares a hearing notice and draft regulation to formally identify the substance as a TAC. Based on the input from the public and the information gathered from the report, the CARB decides whether to identify a substance as a TAC. In 1993, the California Legislature amended the Toxic Air Contaminant Identification and Control Act by requiring CARB to identify 189 federal hazardous air pollutants as State TACs.

30 CARB, *California Air Toxics Program – Background*, December 13, 2017. https://www.arb.ca.gov/toxics/background.htm. Accessed April 3, 2018.

In the second step (risk management), CARB reviews the emission sources of an identified TAC to determine if any regulatory action is necessary to reduce the risk. The analysis includes a review of controls already in place, the available technologies and associated costs for reducing emissions, and the associated risk.

The Air Toxics "Hot Spots" Information and Assessment Act (Health and Safety Code section 44360) supplements the Toxic Air Contaminant Identification and Control Act by requiring a Statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks. The program is designated to quantify the amounts of potentially hazardous air pollutants released, the location of the release, the concentrations to which the public is exposed, and the resulting health risks.[31] The "Hot Spots" Act also requires stationary sources that pose a significant health risk to the community to reduce their risk through a risk management plan.

The California Office of Environmental Health Hazard Assessment (OEHHA) published a guidance manual in 2015 to assist the preparation of health risk assessments (HRA) for carcinogenic and non-carcinogenic exposures to air toxics in accordance with the Air Toxics Hot Spots Information and Assessment Act.[32] The 2015 OEHHA HRA guidelines provide methodologies for assessing various types of environmental exposures to toxic contaminants, including inhalation exposures. The 2015 OEHHA HRA guidance relied upon a comprehensive review of the most up-to-date scientific literature to formulate the recommended exposure estimation methodologies. The OEHHA guidance acknowledges that children are especially susceptible to the effects of toxic air contaminant exposure, and incorporated age sensitivity factors (ASFs) and age-specific daily breathing rates (DBRs) to account for the differences in sensitivity to carcinogens during early life exposure. OEHHA recommends a default ASF of 10 for the age range between the third trimester of pregnancy through two years, and an ASF of three for ages two through 15 years.

OEHHA has created a publicly available mapping tool called CalEnviroScreen, which helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects. CalEnviroScreen uses environmental, health, and socioeconomic information to produce scores for every census tract in the state. The scores are mapped so that different communities can be compared. An area with a high score is one that experiences a much higher pollution burden than areas with low scores. CalEnviroScreen ranks communities based on data

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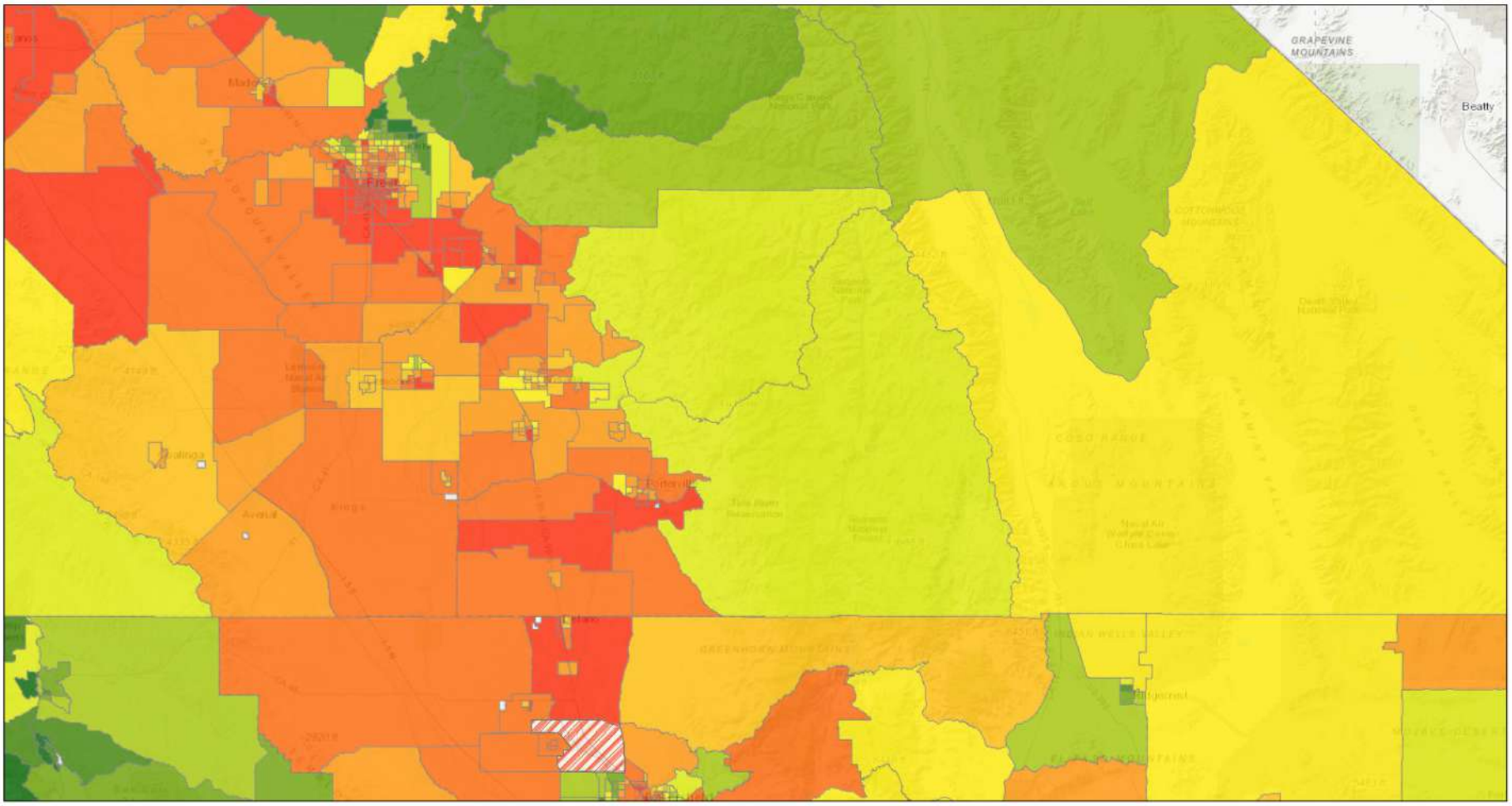
31 CARB. 2016. Overview of the Air Toxics "Hot Spots" Information and Assessment Act. Available online at: https://www.arb.ca.gov/ab2588/overview.htm accessed April 24, 2018.

32 OEHHA, Guidance Manual for Preparation of Health Risk Assessments, *February 2015.*

that are available from state and federal government sources. The OEHHA CalEnviroScreen map for the Tulare County area is presented in **Figure 4.3-2, CalEnviroScreen 3.0 Results**.



SOURCE: OEHHA, CalEnviroScreen 3.0, 2017

FIGURE **4.3-2**

IMPACT SCIENCES

CalEnviroScreen 3.0 Results

1290.001•04/18

Airborne Toxic Control Measure for Asbestos

In July 2001, CARB approved an Air Toxic Control Measure for construction, grading, quarrying and surface mining operations to minimize emissions of naturally occurring asbestos.[33] The regulation requires application of best management practices to control fugitive dust in areas known to have naturally occurring asbestos and requires notification to the local air district prior to commencement of ground-disturbing activities. The measure establishes specific testing, notification and engineering controls prior to grading, quarrying or surface mining in construction zones where naturally occurring asbestos is located on projects of any size. There are additional notification and engineering controls at work sites larger than one acre in size. These projects require the submittal of a "Dust Mitigation Plan" and approval by the air district prior to the start of a project.

Construction sometimes requires the demolition of existing buildings where construction occurs. Buildings often include materials containing asbestos, but no demolition is associated with this project. However, asbestos is also found in a natural state, known as naturally occurring asbestos. Exposure and disturbance of rock and soil that naturally contain asbestos can result in the release of fibers into the air and consequent exposure to the public. Asbestos most commonly occurs in ultramafic rock that has undergone partial or complete alteration to serpentine rock (serpentinite) and often contains chrysotile asbestos. In addition, another form of asbestos, tremolite, can be found associated with ultramafic rock, particularly near faults. Sources of asbestos emissions include unpaved roads or driveways surfaced with ultramafic rock, construction activities in ultramafic rock deposits, or rock quarrying activities where ultramafic rock is present.

Areas are subject to the regulation if they are identified on maps published by the California Geological Survey (CGS) The measure also applies if ultramafic rock, serpentine, or asbestos is discovered during any operation or activity. Review of the CGS maps shows both ultramafic rock or serpentinite, as well as naturally occurring asbestos within Tulare County. These features are primarily located in the central and western portions of Tulare County, primarily occurring just east of State Route 65 between the City of Porterville and the community of Yokohl Valley.[34]

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33 CARB, *Asbestos ATCM for Surfacing Applications*, June 2015. https://www.arb.ca.gov/toxics/atcm/asbeatcm.htm. Accessed April 8, 2018.

34 California Geological Survey, *Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California*, 2011.

4.3.2.3 Ambient Air Quality Standards

A summary of state and federal ambient air quality standards and the effects of the exceedance of these standards on health are shown in **Table 4.3-1, Ambient Air Quality Standards**. For some pollutants, separate standards have been set for different periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values, such as protection of crops, protection of materials, or avoidance of nuisance conditions.

Table 4.3-1
Ambient Air Quality Standards

Air Pollutant	Concentration/Averaging Time State Standard (CAAQS)	Federal Primary Standard (NAAQS)	Most Relevant Health Effects
Ozone	0.09 ppm (180 μg/m³), 1-hour. avg. 0.070 ppm (137 μg/m³), 8-hour avg.	0.070 ppm (137 μg/m³), 8-hour avg.	(a) Short-term exposures: 1) Pulmonary function decrements and localized lung edema in humans and animals; and 2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; and (d) Property damage
Nitrogen Dioxide[1]	0.18 ppm (339 μg/m³), 1-hour avg. 0.030 ppm (57 μg/m³), annual arithmetic mean	100 ppb (188 μg/m³), 1-hour avg. 0.053 ppm (100 μg/m³), annual arithmetic mean	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration
Carbon Monoxide	20 ppm (23 μg/m³), 1-hour avg. 9.0 ppm (10 μg/m³), 8-hour avg.	35 ppm (40 μg/m³), 1-hour avg. 9 ppm (10 μg/m³), 8-hour avg.	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses
Sulfur Dioxide[2]	0.25 ppm (655 μg/m³), 1-hour. avg. 0.04 ppm (105 μg/m³), 24-hour avg.	75 ppb (196 μg/m³), 1-hour avg. No 24-hour avg.	Broncho-constriction accompanied by symptoms, which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM10)	50 μg/m³, 24-hour avg. 20 μg/m³, annual arithmetic mean	150 μg/m³, 24-hour avg. (not to be exceeded more than once per year on average over three years)	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; and (b) Excess seasonal declines in pulmonary function, especially in children.

Air Pollutant	Concentration/Averaging Time State Standard (CAAQS)	Federal Primary Standard (NAAQS)	Most Relevant Health Effects
Suspended Particulate Matter (PM2.5)	12 μg/m³, annual arithmetic mean	35 μg/m³, 24-hour avg. 12 μg/m³, annual arithmetic mean	(a) Increased hospital admissions and emergency room visits for heart and lung disease; (b) Increased respiratory symptoms and disease; and (c) Decreased lung functions and premature death.
Lead[3]	1.5 μg/m³, 30-day avg.	1.5 μg/m³, calendar quarter 0.15 μg/m³, three-month rolling average	(a) Increased body burden; and (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	Extinction coefficient of 0.23 per kilometer - visibility of 10 miles or more due to particles when relative humidity is less than 70 percent, 8-hour avg.	None	The statewide standard is intended to limit the frequency and severity of visibility impairment due to regional haze. This is a visibility based standard not a health based standard. Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent.
Sulfates	25 μg/m³, 24-hour avg.	None	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; and (f) Property damage
Hydrogen Sulfide	0.03 ppm (42 μg/m³), 1-hour avg.	None	Odor annoyance
Vinyl Chloride[3]	0.01 ppm (26 μg/m³), 24-hour avg.	None	Highly toxic and a known carcinogen that causes a rare cancer of the liver.

Source: https://www.epa.gov/criteria-air-pollutants/naaqs-table
https://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm. Accessed March 22, 2018.
μg/m³ = microgram per cubic meter; ppm = parts per million by volume;
NAAQS = National Ambient Air Quality Standards; CAAQS = California Ambient Air Quality Standards

1 *On January 25, 2010, the USEPA promulgated a new 1-hour NO_2 standard. The new 1-hour standard is 0.100 parts per million (188 micrograms per cubic meter [μg/m³]) and became effective on April 12, 2010.*

2 *On June 3, 2010, the USEPA issued a new 1-hour SO_2 standard. The new 1-hour standard is 0.075 parts per million (196 μg/m³). The USEPA also revoked the existing 24-hour and annual standards citing a lack of evidence of specific health impacts from long-term exposures. The new 1-hour standard became effective 60 days after publication in the Federal Register.*

3 *CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.*

The NAAQS (other than O_3, PM10, PM2.5, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. The NAAQS for O_3, PM10, and PM2.5 are based on statistical calculations over one- to three-year periods, depending on the pollutant. The CAAQS are not to be exceeded during a three-year period.

The determination of whether an area meets the state and federal standards is based on air quality monitoring data. Some areas are unclassified, which means there is insufficient monitoring data for determining attainment or nonattainment. Unclassified areas are typically treated as being in attainment.

Because the attainment/nonattainment designation is pollutant specific, an area may be classified as nonattainment for one pollutant and attainment for another. Similarly, because the state and federal standards differ, an area could be classified as attainment for the federal standards of a pollutant and as nonattainment for the state standards of the same pollutant.

Tulare County is located within the San Joaquin Valley Air Basin, where air pollution control authority is vested with the San Joaquin Valley Air Pollution Control District (SJVAPCD). The SJVAPCD boundary is shown in **Figure 4.3-1**. The attainment status of the San Joaquin Valley Air Basin (in which Tulare County is located) for the NAAQS and the CAAQS is summarized in **Table 4.3-2, National and California Ambient Air Quality Standard Designations for the San Joaquin Valley Air Basin**.

Table 4.3-2
National and California Ambient Air Quality Standard Designations for the San Joaquin Valley Air Basin

Pollutant	National Ambient Air Quality Standard Designations San Joaquin Valley Air Basin	California Ambient Air Quality Standard Designations San Joaquin Valley Air Basin
Ozone (O_3) – 1 hour	None	**Nonattainment/Severe**
Ozone (O_3) – 8 hour	**Nonattainment/Extreme**	**Nonattainment**
Carbon Monoxide (CO)	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide (NO_2)	Attainment/Unclassified	Attainment
Sulfur Dioxide (SO_2)	Attainment/Unclassified	Attainment
Respirable Particulate Matter (PM10)	Attainment	**Nonattainment**
Fine Particulate Matter (PM2.5)	**Nonattainment**	**Nonattainment**
Lead (Pb)	No Designation/Classification	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl chloride	No Federal Standard	Attainment

Source: SJVAPCD. http://www.valleyair.org/aqinfo/attainment.htm. Accessed April 18, 2018.

4.3.2.4 Ambient Air Monitoring

CARB has established and maintains a network of sampling stations in conjunction with local air pollution control districts (APCDs) and air quality management districts (AQMDs), private contractors, and the National Park Service. The monitoring station network provides air quality monitoring data, including real-time meteorological data and ambient pollutant levels, as well as historical data. The

network in the County consists of 5 monitoring stations. Air quality-monitoring sites located throughout Tulare County are also shown above in **Figure 4.3-1**. **Table 4.3-3, Ambient Air Quality in Tulare County – California and National Standards,** presents the measured ambient pollutant concentrations and the exceedances of state and federal standards that have occurred at the above-mentioned monitoring stations from 2014 through 2016, the most recent years for which data are available.

4.3.2.3 Regional

San Joaquin Valley Air Pollution Control District

The SJVAPCD is the agency responsible for monitoring and regulating air pollutant emissions from stationary, area, and indirect sources within Tulare County and throughout the SJVAB. The SJVAPCD also has responsibility for monitoring air quality and setting and enforcing limits for stationary source emissions. The SJVAPCD issues authorities to construct and permits to operate for modified and new stationary sources; this permitting program is integrated with the federal Clean Air Act Title V federal permitting program for "major" sources of emissions.

CARB is the agency with the legal responsibility for regulating mobile source emissions. SJVAPCD is precluded from such activities under state law.

The SJVAPCD was formed in mid-1991 and prepared and adopted the San Joaquin Valley Air Quality Attainment Plan (AQAP), dated January 30, 1992, in response to the requirements of the California Clean Air Act (CCAA). The AQAPwas revised in June 2005. The CCAA requires each non-attainment district to reduce pertinent air contaminants by at least 5 percent per year until new, more stringent, state air quality standards are met.

The SJVAPCD currently maintains plans for ozone, PM10 and PM2.5. The air district has developed a new plan for EPA's revoked 1997 1-hour ozone standard. Although EPA approved the District's 2004 plan for the 1-hour ozone standard in 2010, EPA withdrew this approval as the result of litigation. The District's 2013 Plan for the Revoked 1-Hour Ozone Standard was approved by the District Governing Board at a public hearing on September 19, 2013. The modeling confirms that the Valley will attain the revoked 1-hour ozone standard by 2017. [35]

[35] San Joaquin Valley Air Pollution Control District (SJVAPCD). 2012. 2013 Plan for the Revoked 1-Hour Ozone Standard. Available online at: http://valleyair.org/Air_Quality_Plans/Ozone-OneHourPlan-2013.htm, accessed on April 25, 2018.

Table 4.3-3
Ambient Air Quality in Tulare County – California and National Standards

CARB Air Monitoring Station	Number of Days Exceeding CAAQS			Maximum 24-Hour Concentration State (ppm or µg/m3)			Number of Days Exceeding NAAQS			Maximum 24-Hour Concentration National (ppm or µg/m3)		
	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
1-Hour Ozone												
Porterville 1839 Newcomb Street	0	4	9	0.085	0.100	0.106	0	0	0	0.085	0.100	0.106
Sequoia and Kings Canyon National Park	8	12	13	0.104	0.109	0.108	0	0	0	0.104	0.109	0.108
Sequoia National Park Lower Kaweah	2	2	6	0.109	0.098	0.103	0	0	0	0.109	0.098	0.103
Visalia North Church Street	1	9	1	0.095	0.110	0.098	0	0	0	0.095	0.110	0.098
8-Hour Ozone												
Porterville 1839 Newcomb Street	5	42	81	0.075	0.091	0.093	4	41	80	0.074	0.091	0.092
Sequoia and Kings Canyon National Park	88	69	91	0.092	0.091	0.096	81	67	87	0.091	0.090	0.096
Sequoia National Park Lower Kaweah	62	45	70	0.094	0.086	0.093	61	43	64	0.093	0.086	0.092
Visalia North Church Street	27	52	19	0.080	0.091	0.083	25	49	18	0.079	0.090	0.083
CO												
No data.												
1-Hour NOx												
Visalia North Church Street	0	0	0	0.064	0.062	0.057	0	0	0	64.5	62.3	57.5
SOx (sulfur oxides)												
No data.												
24-Hour PM2.5												
Porterville 1839 Newcomb Street	*	*	*	78.2	82.6	63.9	*	*	*	*	*	*
Visalia North Church Street	*	*	*	85.9	91.5	53.9	35.5	17.9	21.3	81.6	86.3	48.0
24-Hour PM10												
Visalia North Church Street	17	67	95	104.2	140.3	132.5	0	0	0	102.4	67.3	137.1

** Insufficient data.*
Source: CARB. Top 4 Measurements and Days Above the Standard. http://www.arb.ca.gov/adam/index.html. Accessed March 22, 2018.

The most recent 8-hour ozone plan was adopted June 16, 2016.[36] The plan addresses federal mandates related to the 2008 8-hour ozone NAAQS. This plan demonstrates that SJVAPCD regulatory measures meet and exceed federal Clean Air Act (CAA) requirements, includes additional commitments for potential further reductions in emissions, and ensures expeditious attainment of the 2008 8-hour ozone standard by December 31, 2031.

The air district has achieved the NAAQS for PM10, but produced a maintenance plan in 2007 which remains in effect.[37] On September 15, 2016, CARB approved the air district's 2016 Moderate Area Plan for the 2012 PM2.5 Standard.[38] The Moderate Area Plan sets out the strategy to attain the federal 2012 PM2.5 federal annual air quality standard of 12 $\mu g/m^3$ by 2021.

Guidance for Assessing and Mitigating Air Quality Impacts

The SJVAPCD *Guidance for Assessing and Mitigating Air Quality Impacts* (*GAMAQI*) is an advisory document that provides lead agencies, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents. Local jurisdictions are not required to use the methodology outlined therein. The *GAMAQI* describes the criteria that the SJVAPCD uses when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for determining whether projects would have significant adverse environmental impacts, identifies methodologies for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts. The *GAMAQI* includes guidance for analysis for criteria pollutants, particulates, and odors for both construction and operations of a project.[39]

Regulation VIII Fugitive PM10 Prohibitions

The SJVAPCD Rules and Regulations include Regulation VIII Fugitive PM10 Prohibitions, which was developed to reduce ambient concentrations of fine particulate matter (PM10) by developing rules to control specified anthropogenic fugitive dust sources. The rules were developed pursuant to the USEPA guidance for Serious PM10 Nonattainment Areas. Regulation VIII has seven rules aimed at controlling fugitive dust from specific sources, which include construction and other earthmoving activities, carryout

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36 SJVAPCD, *2016 Ozone Plan for 2008 8-Hour Ozone Standard,* June 2016. http://www.valleyair.org/Air_quality_Plans/Ozone-Plan-2016/Adopted-Plan.pdf

37 SJVAPCD, *2007 PM10 Maintenance Plan and Request for Redesignation,* September 2007. http://www.valleyair.org/Air_Quality_Plans/docs/Maintenance%20Plan10-25-07.pdf.

38 SJVAPCD, *2016 Moderate Area Plan for the 2012 PM2.5 Standard,* September 2016. http://www.valleyair.org/Air_Quality_Plans/docs/PM25-2016/2016-Plan.pdf

39 SJVAPCD. 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*. Available online at: http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, accessed April 25, 2018.

and trackout, open areas, paved and unpaved roads, and unpaved equipment traffic areas. In most cases, the rules primarily aim to reduce the speed and amount of traffic traveling over unstabilized dirt or otherwise dusty surfaces. This is generally done by either reducing the amount of dusty areas or by restricting traffic in dusty areas. [40]

Regulation VIII identifies general requirements (Rule 8011), as well as those for construction, demolition excavation, extraction, and other earthmoving activities (Rule 8021), bulk materials (Rule 8031), carryout and trackout (Rule 8041), open areas (Rule 8051), paved and unpaved roads (Rule 8061), unpaved vehicle/equipment traffic areas (Rule 8071), and agricultural sources (Rule 8081). Rule 8011 General Requirements are as follows:

- Materials used for chemical/organic stabilization of soils, including petroleum resins, asphaltic emulsions, acrylics, and adhesives shall not violate State Water Quality Control Board standards for use as a soil stabilizer. Materials accepted by the California Air Resources Board (CARB) and the United States Environmental Agency (EPA), and which meet State water quality standards, shall be considered acceptable to the Air Pollution Control Officer (APCO).

- Any material prohibited for use as dust suppressant by EPA, CARB, or other applicable law, rule, or regulation is also prohibited under Regulation VIII.

- Use of hygroscopic materials may be prohibited by the APCO in areas lacking sufficient atmospheric moisture of soil for such materials to effectively reduce fugitive dust emissions. The atmospheric moisture of soil is considered to be sufficient if it meets the application specifications of the hygroscopic product manufacturer. Use of such materials may be approved in conjunction with sufficient wetting of the controlled area.

- Any use of dust suppressants or gravel pads, and paving materials such as asphalt or concrete for paving, shall comply with other applicable District Rules.

4.3.2.4 Local

General plans may contain policies applicable to air quality. The following discusses policies from the Tulare County General Plan that are applicable to air quality.

Tulare County General Plan[41]

- **AQ-1.1 Cooperation with Other Agencies:** The County shall cooperate with other local, regional, federal, and State agencies in developing and implementing air quality plans to achieve State and federal Ambient Air Quality Standards. The County shall partner with the SJVAPCD, Tulare County

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40 SJVAPCD. Current District Rules and Regulations. Available online at: http://www.valleyair.org/rules/1ruleslist.htm#reg8, accessed April 25, 2018.

41 Tulare County. Chapter 9 Air Quality, Tulare County General Plan 2030 Update. Pages 9-7 to 9-11. August 2012.

Association of Governments (TCAG), the California Air Resources Board to achieve better air quality conditions locally and regionally.

- **AQ-1.2 Cooperation with Local Jurisdictions:** The County shall participate with cities, surrounding counties, and regional agencies to address cross-jurisdictional transportation and air quality issues.

- **AQ-1.3 Cumulative Air Quality Impacts:** The County shall require development to be located, designed, and constructed in a manner that would minimize cumulative air quality impacts. Applicants shall be required to propose alternatives as part of the State CEQA process that reduce air emissions and enhance, rather than harm, the environment.

- **AQ-1.4 Air Quality Land Use Compatibility:** The County shall evaluate the compatibility of industrial or other developments which are likely to cause undesirable air pollution with regard to proximity to sensitive land uses, and wind direction and circulation in an effort to alleviate effects upon sensitive receptors.

- **AQ-1.5 California Environmental Quality Act (CEQA) Compliance:** The County shall ensure that air quality impacts identified during the CEQA review process are consistently and reasonable mitigated when feasible.

- **AQ-1.6 Purchase of Low Emissions/Alternative Fuel Vehicles:** The County shall encourage County departments and agencies to replace existing vehicles with low emission/alternative fuel vehicles as appropriate.

- **AQ-1.7 Support Statewide Climate Change Solutions:** The County shall monitor and support the efforts of Cal/EPA, CARB, and the SJVAPCD, under AB 32 (Health and Safety Code §38501 *et seq*.), to develop a recommended list of emission reduction strategies. As appropriate, the County will evaluate each new project under the updated General Plan to determine its consistency with the emission reduction strategies.

- **AQ-1.8 Greenhouse Gas Emissions Reduction Plan/Climate Action Plan:** The County will develop a Greenhouse Gas Emissions Reduction Plan (Plan) that identifies the GHG emissions within the County as well as ways to reduce those emissions. The Plan will incorporate the requirements adopted by the California Air Resources Board specific to this issue. In addition, the County will work with the Tulare County Association of Governments and other applicable agencies to include the following key items in the regional planning efforts.

    1. Inventory all known, or reasonably discoverable, sources of greenhouse gases in the County,
    2. Inventory the GHG emissions in the most current year available, and those projected for year 2020, and
    3. Set a target for the reduction of emissions attribute to the County's discretionary land use decisions and its own internal government operations.

- **AQ-1.9 Support Off-Site Measures to Reduce Greenhouse Gas Emissions:** The County will support and encourage the use of off-site measures or the purchase of carbon offsets to reduce GHG emissions.

- **AQ-1.10 Alternative Fuel Vehicle Infrastructure:** County shall support the development of necessary facilities and infrastructure needed to encourage the use of low or zero-emission vehicles (e.g., electric vehicle charging facilities and conveniently located alternative fueling stations, including CNG filling stations).

- **AQ-2.1 Transportation Demand Management Programs:** The County shall coordinate and provide support for County Transportation Demand Management programs with other public and private agencies, including programs developed by the TCAG and the SJVAPCD.

- **AQ-2.2 Indirect Source Review:** The County shall require major development projects, as defined by the SJVAPCD, to reasonably mitigate air quality impacts associated with the project. The County shall notify developers of SJVAPCD Rule 9510 – Indirect Source Review requirements and work with SJVAPCD to determine mitigations, as feasible, that may include, but are not limited to the following:

    1. Providing bicycle access and parking facilities,
    2. Increasing density,
    3. Encouraging mixed use development,
    4. Providing walkable and pedestrian-oriented neighborhoods,
    5. Providing increased access to public transportation,
    6. Providing preferential parking for high-occupancy vehicles, car pools, or alternative fuels vehicles, and
    7. Establishing telecommuting programs or satellite work centers.

- **AQ-2.3 Transportation and Air Quality:** When developing the regional transportation system, the County shall work with TCAG to comprehensively study methods of transportation which may contribute to a reduction in air pollution in Tulare County. Some possible alternatives that should be studied are:

    1. Commuter trains (Light Rail, Amtrak, or High Speed Rail) connecting with Sacramento, Los Angeles, and San Francisco, with attractive services scheduled up and down the Valley,
    2. Public transportation such as buses and light rail, to serve between communities of the Valley, publicly subsidized if feasible,
    3. Intermodal public transit such as buses provided with bicycle racks, bicycle parking at bus stations, bus service to train stations and airports, and park and ride facilities, and
    4. Community transportation systems supportive of alternative transportation modes, such as cycling or walking trails, with particular attention to high-density areas.

- **AQ-2.4 Transportation Management Associations:** The County shall encourage commercial, retail, and residential developments to participate in or create Transportation Management Associations (TMAs) that may assist in the reduction of pollutants through strategies that support carpooling or other alternative transportation modes.

- **AQ-2.5 Ridesharing:** The County shall continue to encourage ridesharing programs such as employer-based rideshare programs.

- **AQ-3.1 Location of Support Services:** The County shall encourage the location of ancillary employee services (including, but not limited to, child care, restaurants, banking facilities, convenience markets) near major employment centers for the purpose of reducing midday vehicle trips.

- **AQ-3.2 Infill Near Employment:** The County shall identify opportunities for infill development projects near employment areas within all unincorporated communities and hamlets to reduce vehicle trips.

- **AQ-3.3 Street Design:** The County shall promote street design that provides an environment which encourages transit use, biking, and pedestrian movements.

- **AQ-3.4 Landscape:** The County shall encourage the use of ecologically based landscape design principles that can improve local air quality by absorbing CO_2, producing oxygen, providing shade, that reduces energy required for cooling, and filtering particulates. These principles include, but are not limited to, the incorporation of parks, landscaped medians, and landscaping within development.

- **AQ-3.5 Alternative Energy Design:** The County shall encourage all new development, including rehabilitation, renovation, and redevelopment, to incorporate energy conservation and green building practices to maximum extent feasible. Such practices include, but are not limited to: building orientation and shading, landscaping, and the use of active and passive solar heating and water systems.

- **AQ-3.6 Mixed Land Uses:** The County shall encourage the clustering of land uses that generate high trip volumes, especially when such uses can be mixed with support services and where they can be served by public transportation.

- **AQ-4.1 Air Pollution Control Technology:** The County shall utilize the BACM and RACM as adopted by the County to support SJVAPCD air quality attainment plans to achieve and maintain healthful air quality and high visibility standards. These measures shall be applied to new development approvals and permit modifications as appropriate.

- **AQ-4.2 Dust Suppression Measures:** The County shall require developers to implement dust suppression measures during excavation, grading, and site preparation activities consistent with SJVAPCD Regulation VIII – Fugitive Dust Prohibitions. Techniques may include, but are not limited to, the following:

    1. Site watering or application of dust suppressants,
    2. Phasing or extension of grading operations,
    3. Covering of stockpiles,
    4. Suspension of grading activities during high wind periods (typically winds greater than 25 miles per hour), and
    5. Revegetation of graded areas.

- **AQ-4.3 Paving or Treatment of Roadways for Reduced Air Emissions:** The County shall require that all new roads be paved or treated to reduce dust generation where feasible as required by SJVAPCD Regulation VIII, Rule 8061 – Paved and Unpaved Roads. For new projects with unpaved roads, funding for roadways maintenance shall be adequately addressed and secured.

- **AQ-4.4 Wood Burning Devices:** The County shall require the use of natural gas where service is available or the installation of low-emission, EPA-certified fireplace inserts in all open hearth fireplaces in new homes as required under the SJVAPCD Rule 4901 – Woodburning Fireplaces and Woodburning Heaters. The County shall promote the use of natural gas over wood products in space heating devices and fireplaces in all existing and new homes.

- **AQ-4.5 Public Awareness:** The County shall promote public awareness of the seriousness and extent of the existing air quality problems.

- **AQ-4.6 Asbestos Airborne Toxic Control and Dust Protection:** Asbestos is of concern to Tulare County because it occurs naturally in surface deposits of several types of ultramafic materials (materials that contain magnesium and iron and a very small amount of silica). Asbestos emissions can result from the sale of use of asbestos-containing materials, road surfacing with such materials, grading activities, and surface mining. See Implementation Measure 15.

4.3.3 ENVIRONMENTAL IMPACTS

4.3.3.1 Thresholds of Significance

Consistent with Appendix G of the *State CEQA Guidelines*, implementation of the proposed 2018 RTP/SCS would result in significant impacts related to air quality, if any of the following would occur:

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

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative guidelines for ozone precursors).

- Expose sensitive receptors to substantial pollutant concentrations.

- Create objectionable odors affecting a substantial number of people.

As mentioned above, the SJVAPCD's 2015 *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI) includes significance criteria for evaluating construction and operational-phase emissions from direct and indirect sources associated with a project. Indirect sources include motor vehicle traffic resulting from the project and do not include stationary sources covered under permit with the SJVAPCD. However, SJVAPCD recommended thresholds are presented below to further illustrate potential impacts of both construction and operation. For the 2018 RTP/SCS analysis, the following thresholds are used to determine significance:

- Projected short-term emissions of criteria pollutants (construction of transportation projects and projected development) are considered significant if they would result in substantial criteria pollutant

emissions; projected long-term emissions of criteria pollutants are considered significant if they are substantially greater than current emission levels; or, if any recommended threshold from the SJVAPCD listed in **Table 4.3-4** is exceeded. This threshold encompasses the second and third Appendix G criteria listed above (air quality standards violations and increases in criteria pollutants, (Impact AIR-1)

- Projected long-term emissions of toxic air contaminants (diesel particulate matter from heavy-duty diesel trucks and other emissions from industrial activities) are considered significant if they would be greater than current emission levels; localized concentrations of toxic air contaminants at sensitive receptors (short-term and/or long-term) are considered significant if they would exceed existing conditions or exceed SJVAPCD significance thresholds. (Impact AIR-2)

- Projected long-term emissions from all sources (stationary and mobile) are considered significant if they are not consistent with the applicable air quality management plans and state implementation plans. (Impact AIR-3)

Table 4.3-4
SJVAPCD Air Quality Thresholds of Significance – Criteria Pollutants

	Construction Emissions	Operational Emissions	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
Pollutant/Precursor	Emissions (Tons per Year)	Emissions (Tons per Year)	Emissions (Tons per Year)
CO	100	100	100
NOx	10	10	10
ROG	10	10	10
SOx	27	27	27
PM10	15	15	15
PM2.5	15	15	15

Source: SJVAPCD, Air Quality Thresholds of Significance – Criteria Pollutants, March 2015.

4.3.3.2 Methodology

This section summarizes the methodology used to evaluate the impacts of implementation of the Plan on air quality.

Short-Term Emissions Methodology

For construction impacts, the pollutant of greatest concern to the District is PM10. The SJVAPCD's approach to CEQA analyses of construction PM10 impacts is to require implementation of effective and comprehensive control measures in addition to quantification of emissions. Because it is not feasible to

predict construction emissions from all of the future transportation and land use projects included in the RTP/SCS, the construction analysis will focus on the comprehensive control measures for each proposed project. PM10 emitted during construction can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors, making quantification difficult. Despite this variability in emissions, compliance with Regulation VIII and implementation of appropriate mitigation measures to control respirable PM10 emissions are considered by the SJVAPCD to be sufficient to render a project's construction-related PM10 impacts less-than-significant. The SJVAPCD GAMAQI contains a list of feasible control measures for construction-related PM10 emissions.

Long-Term Emissions Methodology

The methodology for determining the significance of air quality impacts compares existing conditions to the 2018 RTP/SCS conditions in the year 2042, as required in CEQA Section 15126.2(a). The project's long-term impacts to air quality are considered significant if the project results in mobile source emissions that significantly exceed existing levels or exceed SJVAPCD thresholds. In this case, the pollutants of concern are ozone precursors (NOx and ROG) and fine particulate matter, as these are the primary pollutants associated with vehicle transportation.

Projected air emissions from mobile sources were calculated using EMFAC2014 emissions factors and multiplied by VMT. The projected VMT were revised by applying off model adjustments to capture reductions in VMT not reflected in the transportation modeling. This adjusted VMT was then entered into the EMFAC 2014 model. The EMFAC emissions factors are established by the California Air Resources Board and accommodate certain mobility assumptions (e.g., vehicle speed, delay times, average trip lengths, and total travel time). Projected vehicle emissions on the TCAG transportation network for the year 2042 under the 2018 RTP/SCS were compared with State Implementation Plan (SIP) emissions budgets. If countywide mobile source ROG or NOx emissions associated with the RTP/SCS do not significantly exceed the SIP budgets, impacts to long-term air quality from mobile source emissions are not considered significant.

Implementation of the RTP/SCS could create both short-term and long-term impacts to air quality. Short-term air quality impacts would be generated during construction of the capital improvements listed in the 2018 RTP/SCS as well as future development facilitated by the SCS land use pattern. Long term emissions would be generated by on-road vehicles which would utilize the transportation improvements, and the land uses proposed, as well as from area and stationary sources, including energy use, associated with new development, and off-road vehicles.

Determination of Significance

The methodology for determining the significance of air quality impacts compares existing air quality to the future air quality under the Plan. The significance thresholds above were applied to compare criteria pollutant emissions generated by the future (2042) Plan conditions to the significance criteria.

Implementation of the 2018 RTP/SCS would generate criteria pollutant emissions in Tulare County. The analysis of these impacts is programmatic and at the regional level. The Plan would result in air quality impacts as a result of criteria pollutant emissions generated by construction of transportation projects and development and operation of the regional transportation system. Project-specific impacts vary and appropriate mitigation measures would need to be developed on a project-by-project basis, as appropriate.

4.3.3.3 Impacts and Mitigation Measures

Each applicable threshold of significance is listed below, followed by analysis of the significance of impacts and the identification of mitigation measures that would lessen or avoid significant impacts. Finally, the significance of impacts after implementation of all identified mitigation measures is presented.

Impact AIR-1 **Violate any air quality standard or contribute substantially to an existing or projected air quality violation. Projected short-term emissions of criteria pollutants (construction of transportation projects and projected development) are considered to be significant if they would result in substantial criteria pollutant emissions. Projected long-term emissions of criteria pollutants are considered significant if they are substantially greater than current emission levels or exceed SJVAPCD significance thresholds.**

Short-Term Emissions

Implementation of the 2018 RTP/SCS would result in construction of roadways and other transportation projects as well as general construction as part of regional growth. These construction activities would result in short-term emissions of air pollutants including ROG, NOx, PM10, PM2.5 and fugitive dust. The sources associated with these emissions include construction equipment, employee and vendor vehicles, demolition, grading and other ground-disturbing activities, application of paint and other coatings, paving, and others. The level of emissions is generally proportional to the size of the construction project, with larger projects typically resulting in larger emissions during construction. Although individual projects may or may not exceed the significance thresholds listed in **Table 4.3-4**, it is

unlikely that countywide construction emissions would be less than the SJVAPCD thresholds listed in **Table 4.3-4**. However, individual projects would need to conduct their own environmental analysis, and each of these projects would need to compare construction emissions with the thresholds listed in **Table 4.3-4.**

The SJVAPCD provides a suggested list of project-specific mitigation measures for construction sites in Tulare County. These measures are primarily aimed at reducing fugitive dust. SJVAPCD indicates that projects complying with district Regulation VIII – Fugitive PM10 Prohibitions would have a less than significant impact on local air quality. The SJVAPCD also indicates that large construction projects may exceed the annual significance thresholds, and to contact them for recommendations for analysis of large construction projects.

Construction projects (both transportation and development) associated with the 2018 RTP/SCS would comply with Regulation VIII, which would reduce construction emissions. However, given the unknown scale of construction over the 24-year period covered by the 2018 RTP/SCS, it is possible that criteria pollutant emissions could exceed the annual SJVAPCD significance thresholds listed in **Table 4.3-4**. In addition, increased dust from construction activities could increase the number of cases of Valley Fever. Consequently, short-term emissions resulting from construction would have a significant impact.

Construction impacts would be significant and unavoidable. Mitigation is required. **Mitigation Measure MM-AIR-1(a)** would reduce impacts, but not below a level of significance.

Long-Term Residential and Commercial Land Use Emissions

The development of new residential and commercial land uses as part of the 2018 RTP/SCS would result in increased emissions from area sources, energy use, waste management, and water use. Examples of this type of emissions includes the use of cleaning products, commercial and residential natural gas usage, electricity generation for residential and commercial lighting and electronic devices, water conveyance and treatment, and gases emitted by landfills. Although this type of emission will be analyzed on a project by project basis, it can conservatively be assumed that the increase in residential and commercial buildings and related increase in population under the 2018 RTP/SCS would result in an increase in emissions related to these types of sources. As a result, it can be assumed that these emissions will exceed existing conditions. Consequently, long term emissions from these land uses would result in a significant impact.

Implementation of **Mitigation Measures MM-AIR-1(a), MM-EN-1(a)** and **MM-GHG-1(a)** would reduce the 2018 RTP/SCS contribution to long-term residential and commercial land use emission impacts; however, the 2018 RTP/SCS's contribution to these impacts would remain significant and unavoidable.

Long-Term Transportation Emissions

Emissions of criteria pollutants from mobile sources would be affected by implementation of the 2018 RTP/SCS. In order to analyze the net impact of implementation, existing year (2017) emissions were compared to buildout year (2042) emissions for the 2018 RTP/SCS. The emissions reported are for all mobile sources in Tulare County.

Results of modeling are presented in **Table 4.3-5, Criteria Pollutant Emissions from Mobile Sources**. As shown, there are large reductions of ROG, NOx, and CO. These would be considered beneficial impacts. This is primarily due to the model assumption that vehicles in the future year scenarios will be cleaner burning than existing conditions.. Emissions of SOx decreased slightly as well as PM2.5. Emissions of PM10 from mobile sources would increase slightly under the 2018 RTP/SCS, but remain below the SJVAPCD significance threshold. As compared to existing, all emissions in 2042 would decrease with the exception of PM10, which would slightly increase.

Table 4.3-5
Criteria Pollutant Emissions from Mobile Sources

	Tons/Day					
Scenario	**ROG**	**NOx**	**CO**	**PM10**	**PM2.5**	**SOx**
Existing 2017	3.37	10.42	24.60	0.74	0.35	0.06
2018 RTP/SCS 2042	0.99	2.89	6.54	0.75	0.30	0.04
2018 RTP Net (2018 RTP/SCS - Existing)	-2.38	-7.52	-18.06	0.01	-0.05	-0.02
2018 RTP/SCS Net (Extrapolated to Tons/Year)	-868.70	-2,748.45	-6,591.90	3.65	-18.25	-7.30
SJVAPCD Threshold (tpy)	10	10	100	15	15	27
Exceed Threshold?	No	No	No	No	No	No
No Project 2042	0.99	2.91	6.60	0.75	0.30	0.04
No Project Net (No Project 2042 – Existing)	-2.38	-7.51	-18.00	0.01	-0.05	-0.02
2018 RTP/SCS Net (Extrapolated to Tons/Year)	-868.70	-2,741.15	-6,570.00	3.65	-18.25	-7.30
SJVAPCD Threshold (tpy)	10	10	100	15	15	27
Exceed Threshold?	No	No	No	No	No	No

Source: TCAG, 2018 based on EMFAC 2014 modeling.

PM10 emissions under the 2018 RTP/SCS would increase approximately one percent. As VMT increases so does entrained roadway PM10 and PM2.5. The Plan would increase total VMT when compared to

existing conditions and therefore entrained roadway PM10 and PM2.5 would increase. However, stringent emissions controls would reduce exhaust emissions of PM10 and PM2.5.

A conformity analysis was prepared for the 2018 RTP/SCS that analyzed emissions of ozone precursors (ROG and NOx), CO, PM10 and PM2.5 compared to the approved emissions budgets for mobile sources in Tulare County.[42] The conformity analysis found that emissions of all pollutants passed the applicable conformity tests, and that TCAG is therefore in conformity with the SIP. SIPs, as described above under the **Subsection 4.3.2, Regulatory Framework**, are regional plans to attain the federal standards. This indicates that the 2018 RTP/SCS mobile source emissions would not exceed state or federal emissions limits designed to achieve ambient air quality standards for any pollutants, including PM10. In sum, while there is a small increase in PM10 under the Plan it is not a substantial increase and would not inhibit the County's progress toward attainment status for PM10. Therefore, and because this increase is well below the SJVAPCD significance threshold for PM10, long-term mobile source emissions impacts are considered less than significant.

Level of Significance Before Mitigation

Short-term emissions: Significant.

Long-term residential and commercial land use emissions: Significant.

Long-term transportation emissions: Less than significant.

Mitigation Measures

MM-AIR-1(a): Consistent with the provisions of Section 15091 of the *State CEQA Guidelines*, TCAG has identified mitigation measures capable of avoiding or reducing the significant effects regarding construction emissions that are within the jurisdiction and responsibility of local agencies (land use projects) and implementing agencies (transportation projects) . Where the Lead Agency has identified that a project has the potential for significant effects, the Lead Agency can and should consider mitigation measures to minimize reduce construction emissions below SJVAPCD construction emissions thresholds. Such measures include, but are not limited to, the following:

- Prepare a plan for approval by the SJVAPCD demonstrating that the heavy-duty (equal to or greater than 50 horsepower) off-road equipment to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20 percent NOx reduction and 45 percent

42 2018 Tulare County Regional Transportation Plan/Sustainable Communities Strategy. Appendix 41.

particulate reduction compared to the most recent CARB fleet average at time of construction. A Construction Mitigation Calculator (MS Excel) may be downloaded from the Sacramento Metropolitan Air Quality Management District (SMAQMD) web site to perform the fleet average evaluation (http://www.airquality.org/businesses/ceqa-land-use-planning/mitigation).
Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology (Carl Moyer Guidelines), after-treatment products, voluntary offsite mitigation projects, provide funds for air district off-site mitigation projects, and/or other options as they become available. The air district should be contacted to discuss alternative measures.

- Ensure that all construction equipment is properly tuned and maintained.
- Minimize idling time to 5 minutes – saves fuel and reduces emissions.
- Provide an operational water truck on-site at all times. Apply water to control dust as needed to prevent dust impacts off-site.
- Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.
- Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.
- As appropriate, require that portable engines and portable engine-driven equipment units used at the project work site, with the exception of on-road and off-road motor vehicles, obtain CARB Portable Equipment Registration with the state or a local district permit. Arrange appropriate consultations with the CARB or the District to determine registration and permitting requirements prior to equipment operation at the site. Minimize land disturbance.
- Suspend grading and earth moving when wind gusts exceed 25 miles per hour unless the soil is wet enough to prevent dust plumes.
- Cover trucks when hauling dirt.
- Stabilize the surface of dirt piles if not removed immediately.
- Limit vehicular paths on unpaved surfaces and stabilize any temporary roads.
- Minimize unnecessary vehicular and machinery activities.
- Sweep paved streets at least once per day where there is evidence of dirt that has been carried on to the roadway.

- Revegetate disturbed land, including vehicular paths created during construction to avoid future off-road vehicular activities.
- On Caltrans projects, Caltrans Standard Specifications 10-Dust Control, 17-Watering, and 18-Dust Palliative shall be incorporated into project specifications.
- An asbestos dust mitigation plan shall be prepared for projects suspected to be located on or near soils which may contain naturally occurring asbestos.
- Prohibition of any rock crushing activity where materials may contain asbestos.

Level of Significance After Mitigation

Short-term emissions: Because this PEIR evaluates impacts at the programmatic level, all project circumstances are not foreseeable and these mitigation measures may not be feasible or effective for some projects. Therefore, even with implementation of **Mitigation Measure MM-AIR-1(a)**, impacts would remain significant and unavoidable. No additional feasible mitigation measures are available to reduce significant and unavoidable impacts beyond those identified in this PEIR.

Long term residential and commercial land use emissions: Because this PEIR evaluates impacts at the programmatic level, all project circumstances are not foreseeable and these mitigation measures may not be feasible or effective for some projects. Therefore, even with implementation of **Mitigation Measure MM-AIR-1(a), MM-EN-1(a),** and **MM-GHG-1(a)**, impacts would remain significant and unavoidable. No additional feasible mitigation measures are available to reduce significant and unavoidable impacts beyond those identified in this PEIR.

Long-term transportation emissions: Less than significant.

Impact AIR-2 **Expose sensitive receptors to substantial pollutant concentrations: Projected long-term emissions of toxic air contaminants (diesel particulate matter from heavy-duty diesel trucks and other emissions from industrial activities) are considered significant if they would be greater than current emission levels; and/or localized concentrations of toxic air contaminants at sensitive receptors (short-term and/or long-term) are considered significant if they would exceed existing conditions or SJVAPCD significance thresholds.**

Localized concentrations of TACs generally depend on two factors: meteorological conditions and TAC emissions. Meteorological conditions can act to either concentrate or disperse pollutants depending on the particulars of airflow in the area. Airflow is affected by temperature, geography, pressure gradients, and other factors. Airflow patterns can change dramatically on a short-term basis, but averaged over the

long term they are fairly consistent, with exceptions for large-scale changes such as during El Nino events.

Emissions of TACs can come from a variety of mobile and stationary sources, such as diesel construction equipment, truck traffic, stationary combustion sources, industrial processes, dry cleaning, retail service stations, and many others. However, an increase in regional population and commerce may result in increased TAC emissions from stationary sources. Without specific information on individual sources and locations no project- specific analysis of stationary TAC sources is possible.

Short-Term Emissions

The greatest potential for exposure to substantial pollutant concentrations and TAC emissions during construction would be DPM emissions associated with heavy-duty equipment operations and truck traffic during construction activities. According to SJVAPCD significance thresholds, , health effects from carcinogenic air toxics are described in terms of individual cancer risk. "Individual cancer risk" is the likelihood that a person continuously exposed to concentrations of TACs over a 30-year lifetime will contract cancer based on the use of standard risk assessment methodology. SJVAPCD thresholds are as follows: the incremental cancer risk should not exceed an incremental increase of 10 excess cancer cases per million, and the chronic and acute non-carcinogenic risks should not exceed a calculated Hazard Index (HI) value of 1.0. [43]

A conservative analysis of maximum potential exposures of sensitive receptors to carcinogenic risks assumes that residential exposures begin at birth, and exposures of children at schools is anticipated to begin at the lowest educational grade level. The OEHHA guidance (discussed in the Regulatory Framework above) provides recommended values that are specific to the age of the receptor and the type of activity in which the receptor would be engaged during exposure, which are evaluated on a case-by-case basis. The San Joaquin Valley Air Pollution Control District that has adopted guidelines to implement the 2015 OEHHA HRA guidelines.[44]

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43 The hazard index (HI) is only an approximation of the aggregate effect on the target organ (e.g., the lungs) because some of the substances might cause irritation by different (i.e., non-additive) mechanisms. As with the hazard quotient, aggregate exposures below an HI of 1.0 derived using target organ specific hazard quotients likely will not result in adverse non-cancer health effects over a lifetime of exposure and would ordinarily be considered acceptable. An HI equal to or greater than 1.0, however, does not necessarily suggest a likelihood of adverse effects. Additional information and full definition can be found at: https://www.epa.gov/national-air-toxics-assessment/nata-glossary-terms

44 San Joaquin Valley Unified Air Pollution Control District, Final Staff Report, Update to District's Management Policy to Address OEHHA's Revised Risk Assessment Guidance Document, May 2015 available at: https://www.valleyair.org/busind/pto/staff-report-5-28-15.pdf

The specific locations of future construction activity within the TCAG region was not known when the air quality analysis was completed, and therefore many project-specific variables could not be determined, such as proximity to the emissions sources and duration of exposure. A construction health risk analysis would be speculative given unknown construction locations, construction activities, and local meteorology. However, it is reasonable to assume that some level of construction activity would occur near sensitive receptors (e.g., residences and schools). The significant construction emissions identified above could result in adverse health effects to sensitive receptors. As such, it is likely that intense construction activities (e.g., from development projects that involve a high volume of haul trucks) would exceed the health risk significance thresholds due to equipment and truck exhaust emissions, and short-term impacts of TAC emission would be significant.

Disturbance of rock and soil during construction activities which contains naturally occurring asbestos can result in consequent exposure to the public. Asbestos most commonly occurs in serpentine rock, and its parent material, ultramafic rock. As discussed above, naturally occurring asbestos (NOA) has been identified in Tulare County. Construction activities in areas known to contain ultramafic rocks may expose workers and the general public to naturally occurring asbestos. The Tulare County General Plan includes a policy that requires compliance with all provisions of the state's Air Toxic Control Measure for control of airborne asbestos emissions relating to construction, road maintenance, and grading activities. This policy would reduce exposure to NOA and associated health risks. However, additional mitigation would be required to reduce impacts to the maximum extent feasible. This impact is considered significant.

Long-Term Emissions in General

The 2018 RTP/SCS would result in increased vehicular traffic (both light-duty vehicles and trucks), which as discussed above, can cause increased local TAC concentrations. TACs resulting from vehicle traffic include DPM, benzene, 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, polycyclic organic matter (POM), and naphthalene. These TACs are generally components of vehicle exhaust, though a small portion occur as fugitive emissions that are emitted during fueling or fuel transport. TAC emissions present in vehicle exhaust are typically ROGs, and are included in the estimates of ROG emissions from mobile sources discussed in **Impact AIR-1** above. As shown in **Table 4.3-5**, emissions of ROG would be substantially reduced under the Plan. This would then reflect a general reduction of TACs in vehicle exhausts as well.

Freeways and other heavily travelled roads are generally considered sources of elevated cancer risk due to high concentrations of TACs along these roadways. CARB recommends that local governments avoid

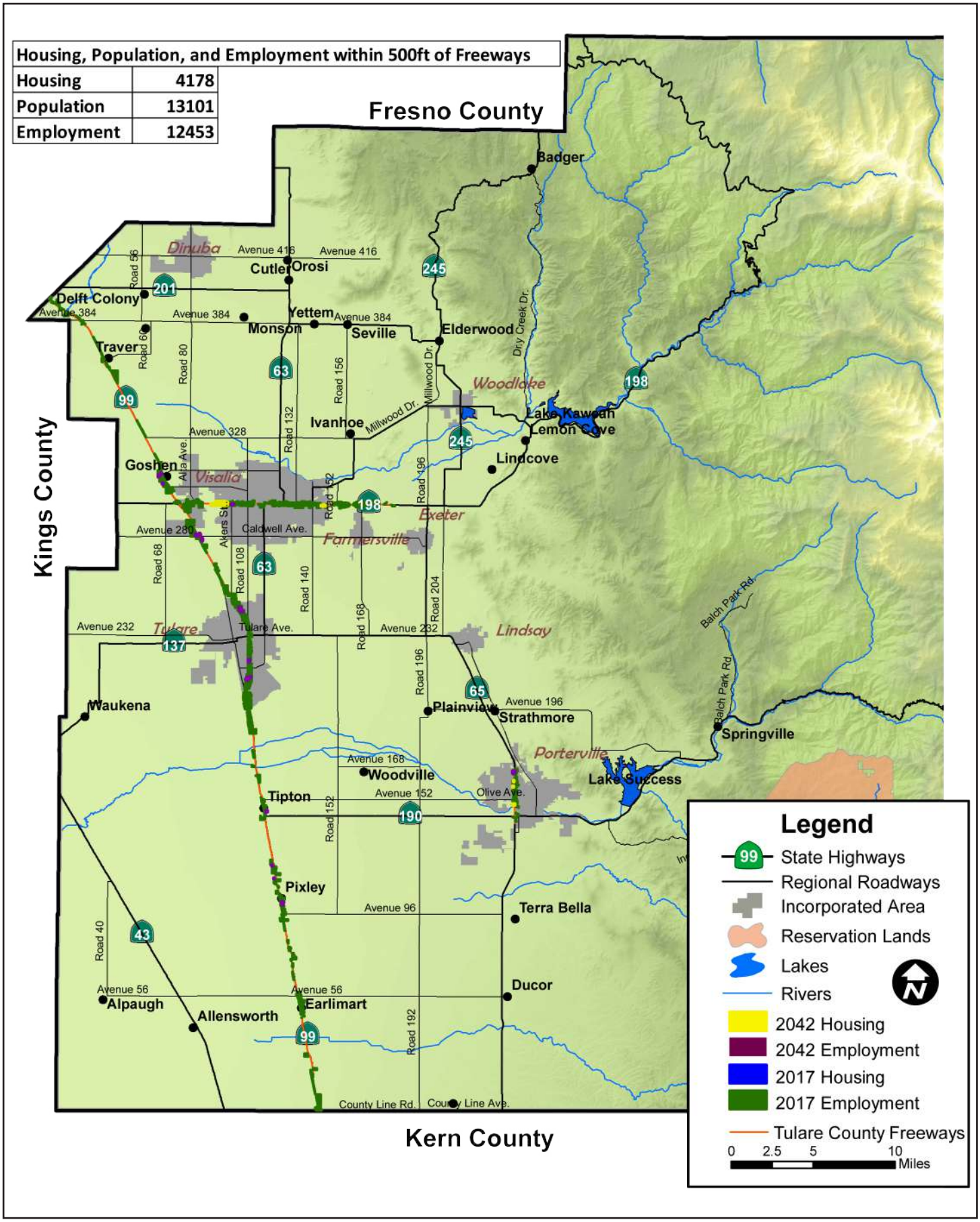
locating new sensitive land uses within 500 feet of freeways.[45] CARB based its 500-foot buffer recommendation on a review of several studies and air dispersion modeling using year 2000 truck and automobile information that included higher DPM emissions rates.

Sensitive land uses/receptors include schools, hospitals, daycare centers, nursing homes, parks and playgrounds, and residences. As shown in **Table 4.9-4 in Section 4.9, Population and Housing**; **Figure 4.3-3 Housing and Employment within 500 Feet of Freeways under the Project (2042);** and **Figure 4.3-4 Housing and Employment within 500 Feet of Freeways under the No Project Alternative**, the 2018 RTP/SCS would place more households and people within 500 feet of high volume roadways than under existing conditions and under the No Project Alternative.

While the 2018 RTP/SCS would significantly decrease emissions of TACs from vehicles as a result of future emission controls, SCS policies to densify development in urban areas could encourage more people to move into areas that could have higher concentrations of TACs. However, as discussed above, emission controls would substantially reduce emissions of all types, which would tend to reduce health risks. The two opposing trends (generally cleaner vehicles, but more people located closer to transportation facilities) will result in cleaner air in the region, but health risks at any given location could increase, and therefore the exposure of sensitive receptors to localized concentrations of TACs could increase above significance thresholds for sensitive receptors.

Another substantial source of TACs is stationary sources, such as diesel generators, industrial processes, operation of oil fields, and dry cleaners. The 2018 RTP/SCS does not have any direct effect on these types of sources, but overall growth could lead to an overall increase in these sources. However, there is no available data on possible new stationary sources that would be in operation in 2042. As such, it is not possible to determine what contribution these sources would have to sensitive receptors, and how the 2018 RTP/SCS would influence any such contribution. While sources of TACs would likely increase, emission control technology and regulations would increase, and therefore, given the lack of data regarding industrial and other stationary sources of TACs, it is not possible to project whether these sources would result in increased health risks in 2042 compared to existing conditions. Consequently, as a conservative approach, this impact is considered significant.

45 California Air Resources Board, *Air Quality and Land Use Handbook: A Community Health Perspective.* April 2005

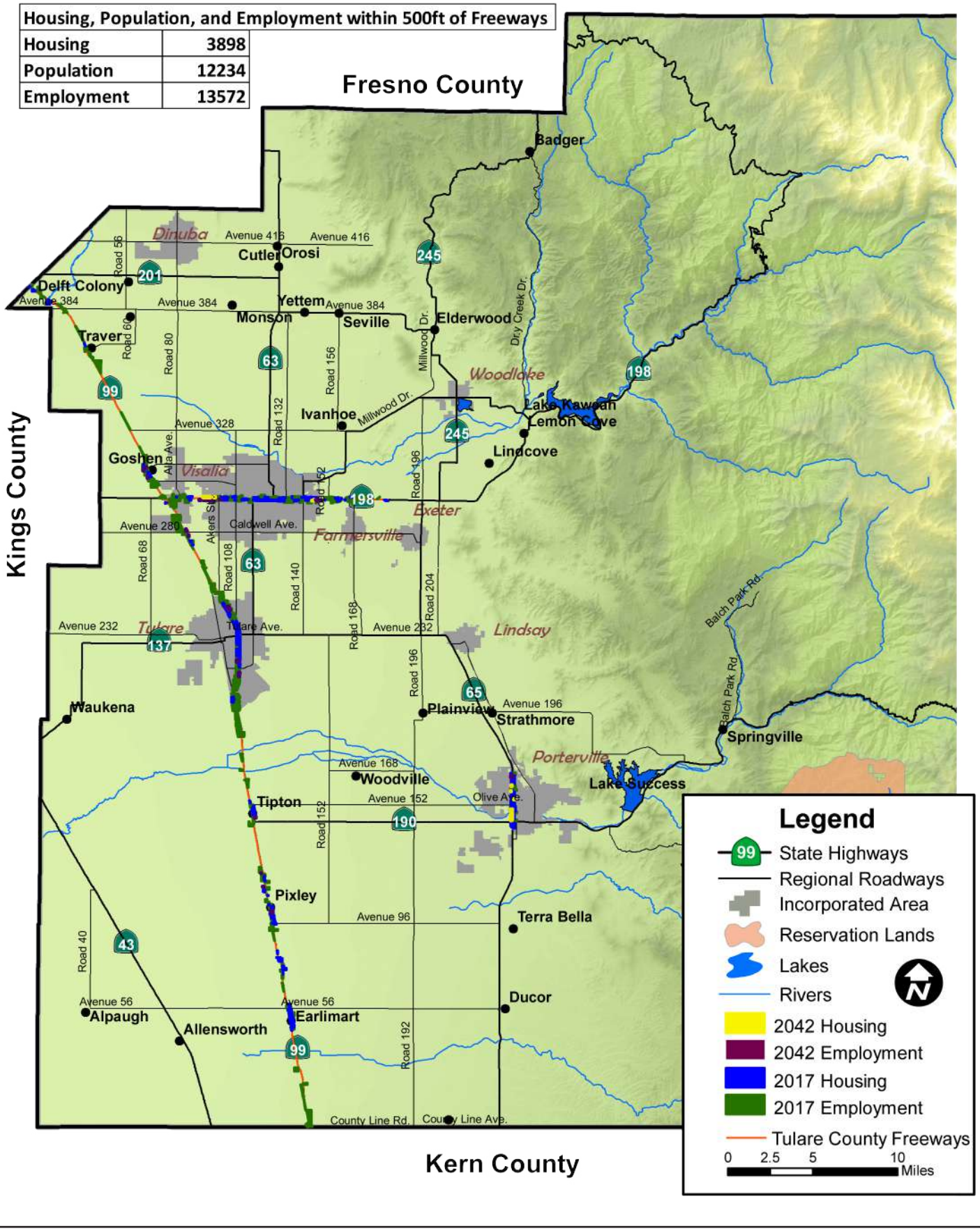


SOURCE: Tulare County Association of Governments, 2018

FIGURE **4.3-3**

IMPACT SCIENCES

Housing and Employment within 500 Feet of Freeways Under the Project (2042)



SOURCE: Tulare County Association of Governments, 2018

FIGURE **4.3-4**

IMPACT SCIENCES

Housing and Employment within 500 Feet of Freeways Under the No Project Alternative (2042)

Long-Term Emissions: Diesel Exhaust

DPM is part of diesel exhaust, and is often found in higher concentrations in areas with significant truck traffic, such as ports, freeways, and distribution centers. However, other areas such as industrial sites can also result in high local concentrations of DPM. DPM is primarily very fine particles, with more than 90 percent of DPM being less than 1 micron in diameter. Since particles less than 2.5 microns in diameter are categorized as PM2.5, this means that over 90 percent of DPM is in the form of PM2.5, with less than 10 percent existing as PM10. PM10 emissions from mobile sources mainly result from tire wear, brake dust, road dust being re-entrained rather than fuel combustion;[46] Because there is a lack of DPM specific data, and most DPM also qualifies as PM2.5, PM2.5 exhaust emissions will be used as a proxy for DPM emissions in this analysis. As shown in **Table 4.3-6**, emissions of PM2.5 for all mobile sources would be reduced under the 2018 RTP/SCS.

In order to more closely evaluate DPM emissions, PM2.5 emissions from heavy-duty diesel vehicles were evaluated. These emissions under existing conditions as compared to 2042 emissions for the Plan and No Project are shown in **Table 4.3-6, PM2.5 Exhaust Emissions from Heavy-Duty Diesel Vehicles.**

Table 4.3-6
PM2.5 Exhaust Emissions from Heavy-Duty Diesel Vehicles (tons/day)

Existing 2017	2042 RTP/SCS	2042 No Project
0.0643	0.0428	0.0425

Source: TCAG 2018

PM2.5 emissions from heavy-duty diesel vehicles in 2042 would be less than the emissions under existing conditions for both the 2018 RTP/SCS and the No Project Alternative, Further, CARB has several programs and regulations in place to further reduce DPM emissions statewide.[47] This includes enforced retrofit of diesel particulate filters, replacement of older trucks and buses, requirements for lower emissions on new diesel vehicles, inspection programs, idling restrictions, and other programs for marine and off-road diesel vehicles. These programs and regulations would reduce DPM emissions over the period of the 2018 RTP/SCS. Consequently, it can be assumed that the reductions in PM2.5 emissions include reductions in DPM emissions region-wide.

46 CARB, *Overview: Diesel Exhaust and Health*, April 2016. https://www.arb.ca.gov/research/diesel/diesel-health.htm

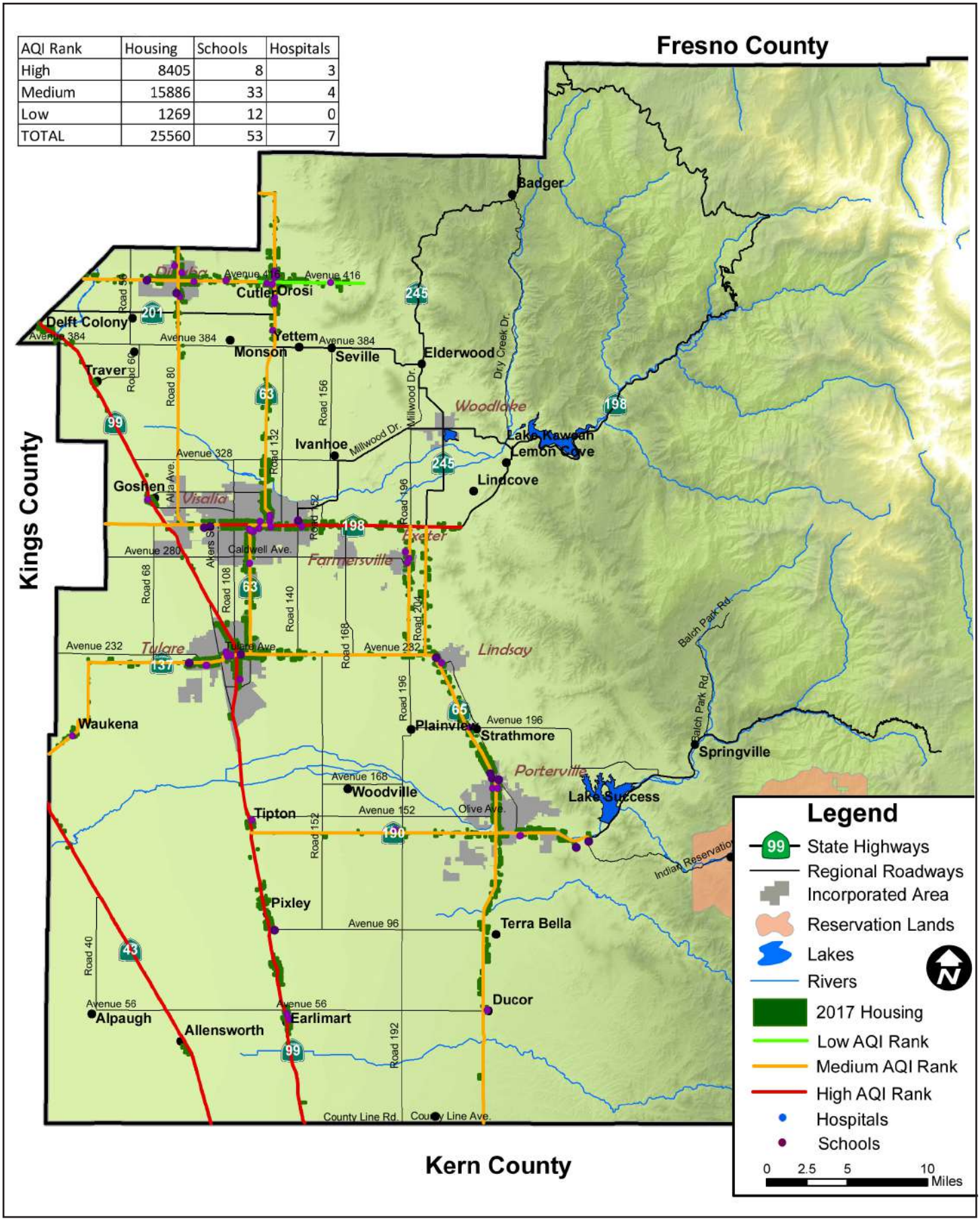
47 Ibid.

While in general DPM emissions in the future would be substantially reduced, 2018 RTP/SCS transportation improvements could bring sources of DPM closer to some sensitive receptors through construction of new facilities or widened roadways, and/or sensitive receptors could be constructed close to DPM sources, all of which could increase exposure of individual sensitive receptors (see above discussion of long-term emissions in general). To provide a measure of this impact, highways in Tulare County were given an Air Quality Index (AQI), based on three factors: (1) average daily traffic (2) percentage of truck traffic and (3) level of service (which is a measure of traffic delays). A 'high' index indicates that a roadway has a relatively high amount of traffic and percentage of trucks, with a low level of service. A "low" index reflects a relatively low amount of traffic, with fewer trucks, and a "high level of service. "Medium" would be somewhere between high and low. In this way, a "high" index qualitatively shows a higher health risk as well, since roadways with a 'high' index would tend to have higher DPM concentrations due to the higher number of trucks and lower traffic speeds.

The AQI for highways in Tulare County for Existing, 2042 Plan and 2042 No Project conditions are shown in **Figures 4.3-5** through **4.3-7 (Figure 4.3-5, Existing Sensitive Receptors within 0.25 Mile of Transportation Air Quality Ranking**; **Figure 4.3-6, Plan Sensitive Receptors within 0.25 Mile of Transportation Air Quality Ranking [2042]; and Figure 4.3-7, No Project Sensitive Receptors within 0.25 Mile of Transportation Air Quality Ranking [2042])**.[48] Sensitive receptors, including the number of schools, hospitals, and households within a quarter mile of each highway, are listed and sorted by AQI. The figures show that in 2042 under the 2018 RTP/SCS, more highways are identified as having a higher AQI rank than under existing conditions.

[48] The CARB *Air Quality and Land Use Handbook: A Community Health Perspective*, 2005, states that the California Education Code section 17213 and the California Public Resources Code section 21151.8 require school districts to consult with administering agencies and local air districts when performing environmental assessment. Such consultation is required to identify both permitted and non-permitted facilities that might significantly affect health at the new site. These facilities include freeways and other busy traffic corridors, large agricultural operations, and rail yards that are within one-quarter mile of the proposed school site and that might emit hazardous air emissions, or handle hazardous or acutely hazardous materials, substances, or waste. One-quarter mile distance from sensitive receptors to these transportation corridors were chosen to reflect consistency with the CARB handbook.

AQI Rank	Housing	Schools	Hospitals
High	8405	8	3
Medium	15886	33	4
Low	1269	12	0
TOTAL	25560	53	7



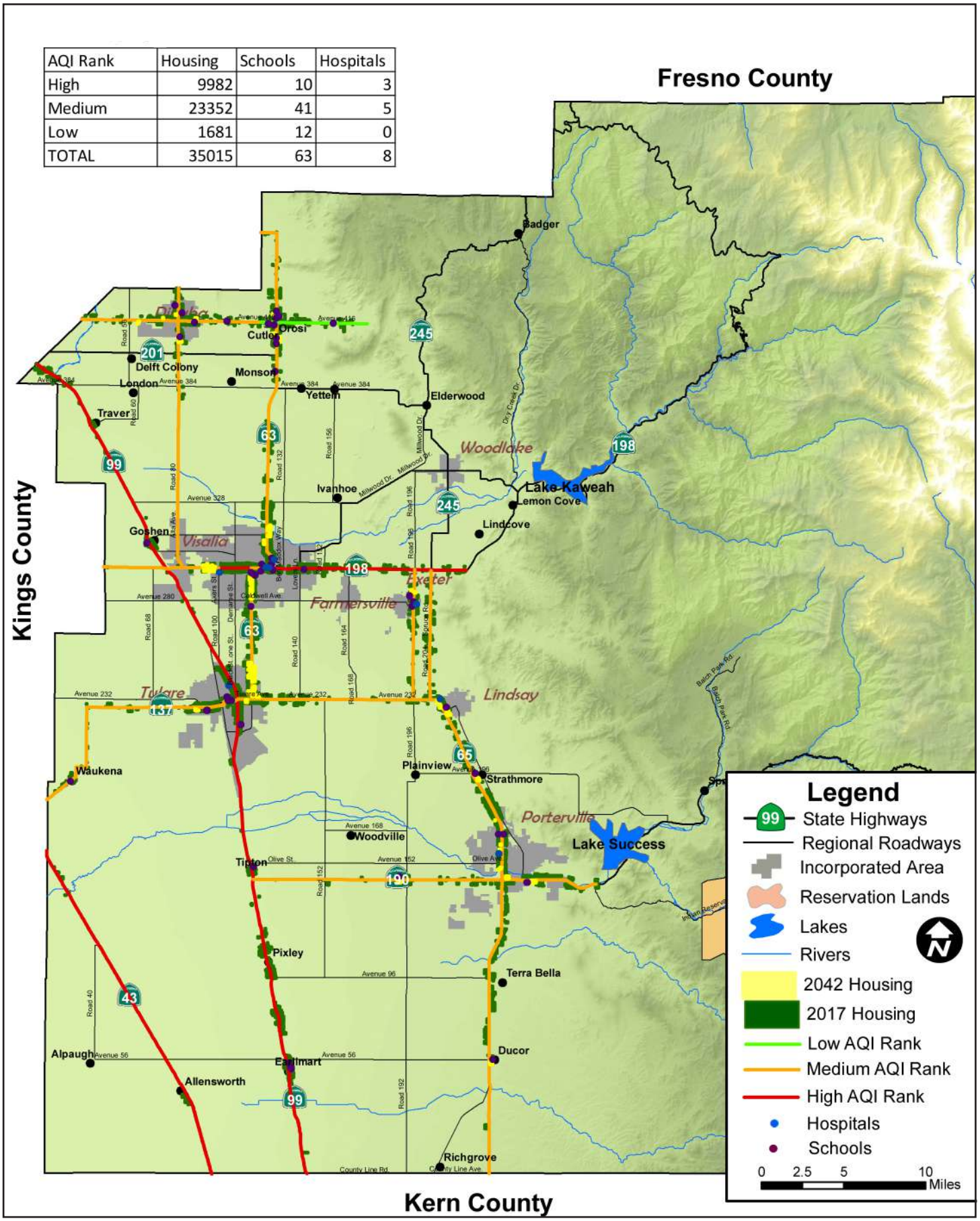
SOURCE: Tulare County Association of Governments, 2018

FIGURE **4.3-5**

IMPACT SCIENCES

Existing Sensitive Receptors within 0.25 Mile of Transportation Air Quality Ranking

AQI Rank	Housing	Schools	Hospitals
High	9982	10	3
Medium	23352	41	5
Low	1681	12	0
TOTAL	35015	63	8

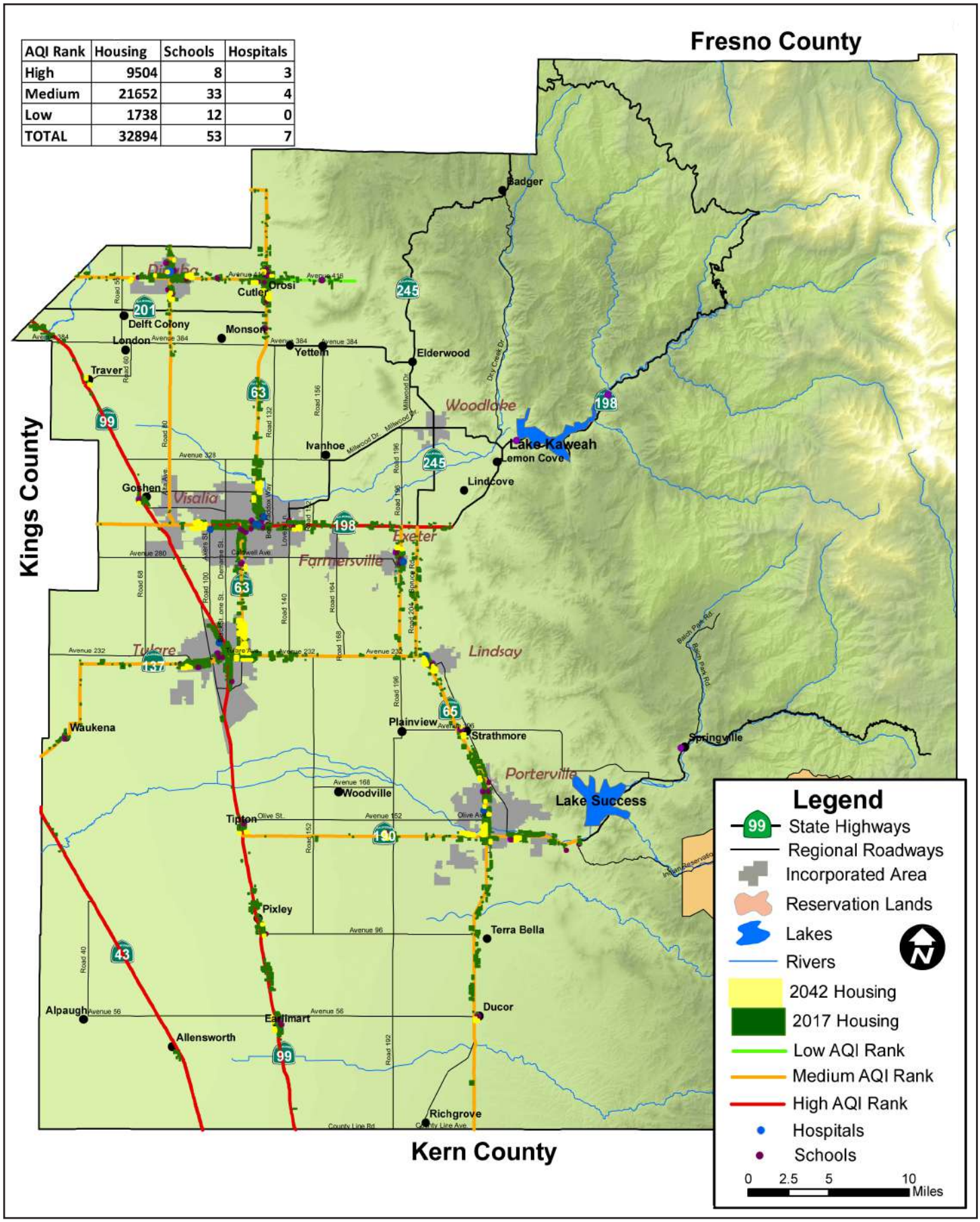


SOURCE: Tulare County Association of Governments, 2018

FIGURE **4.3-6**

IMPACT SCIENCES

Plan Sensitive Receptors within 0.25 Mile of Transportation Air Quality Ranking (2042)



AQI Rank	Housing	Schools	Hospitals
High	9504	8	3
Medium	21652	33	4
Low	1738	12	0
TOTAL	32894	53	7

SOURCE: Tulare County Association of Governments, 2018

FIGURE **4.3-7**

No Project Sensitive Receptors within 0.25 Mile of Transportation Air Quality Ranking (2042)

IMPACT SCIENCES

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The increased number of highways showing a higher AQI (**Figures 4.3-5** through **4.3-7**) is reflective of the fact that there would be higher truck traffic in 2042, and that more sensitive receptors would be located within a quarter mile of Tulare County highways. These sensitive receptors would be located nearer to vehicles emitting TACs, and are exposed to greater concentrations of TACs as compared to receptors located at greater distances from high volume roadways. Comparing the conditions in 2042 between the 2018 RTP/SCS and the No Project Alternative, the overall AQIs would be similar for both. Regarding sensitive receptor locations, the 2018 RTP/SCS and No Project Alternative would both result in the same number of schools and hospitals within a quarter mile of highways, but under the 2018 RTP/SCS slightly more households would be within this distance. Compared to existing conditions, an increased heath risk impact could result from implementation of the 2018 RTP/SCS as more sensitive receptors would be located relatively close to increased truck traffic. However, as noted above PM2.5 would in general decrease, so while there would be more truck traffic on local highways, emissions from these vehicles would decrease.

To determine general risk, a screening risk assessment prepared by the Southern California Association of Governments (SCAG) was used. While the metrological data would be different between the two regions, the screening risk assessment prepared by SCAG can provide helpful information on overall risk trends. SCAG performed a screening risk assessment[49] of freeway corridors in the South Coast region. The assessment analyzed traffic on freeway segments in each of the counties in the SCAG region, for a total of 16 freeway corridors. Cancer risks were estimated to decrease between 2015 and 2042 substantially in all scenarios for residents and workers along the freeway corridors.

As part of the RTP/SCS, TCAG estimates Average Daily Traffic (ADT) on major roadways in the TCAG region. The count includes 2017 and 2042. The highest traffic volume segment was along SR 99 between SR 198 and SR 137, where traffic volumes are projected to increase from 73,126 ADT in 2017 to 94,974 ADT in 2042, for an increase of 21,848 or 30 percent. The SR 99 segment has similar traffic volume to the Interstate-15 (I-15) corridor segment through Victorville in San Bernardino County in the SCAG screening assessment. The I-15 was projected to increase from 96,339 ADT in 2015[50] (existing conditions) to 124,973 ADT in 2040 (RTP/SCS) (an increase of approximately 30 percent). Because the I-15 corridor traffic volumes are greater than the SR 99, this comparison is considered a worst-case scenario. The SCAG study found that residential 30-year cancer risk along the I-15 would decrease from 524 additional cases in a million in 2015 to 64 additional cases in a million in 2040 under their proposed project. The maximum

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[49] South Coast Association of Governments, *Final Program Environmental Impact Report 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy, Appendix D.* December 2015.

[50] The VMT data for the existing conditions simulation was prepared by using the 2012 base year, but includes projects from the 2015 FTIP, as well as projects in the 2012-2035 RTP/SCS.

exposed individual worker cancer risk along I-15 would decrease from 22 additional cases in a million in 2015 to 3 case in a million in 2040 under their proposed project.

While it is not possible to say that results along SR 99 in Tulare County would be identical, the two segments have similar vehicle counts and similar percentage increases (though, as discussed above, the SR 99 traffic volumes increase at a similar rate to the I-15, but with lesser total volumes) and years of analysis. Further, SCAG's analysis showed a decrease in risk across all segments regardless of increase in ADT. Therefore, a conclusion can be drawn that risk is generally going down due to a number of factors. Further, other freeway and highway segments would likely see reductions regardless of increased traffic, as did all segments and corridors assessed in the SCAG study.[51] However, the majority of the segments in the SCAG study, despite reductions in risk, still exceeded the threshold of 10 in a million. Based on the fact that more sensitive receptors would be located in proximity to highways (including those with an AQI index of "high") and that it is likely that overall cancer risk would still exceed the threshold of 10 in a million, this impact would remain significant.

Level of Significance Before Mitigation

Short-term emissions: Significant.

Long-term emissions: Significant.

Mitigation Measures

MM-AIR-2(a): TCAG shall pursue the following activities in reducing the impact associated with health risk within 500 feet of freeways and high-traffic volume roadways:

- Participate in on-going statewide deliberations on health risks near freeways and high-traffic volume roadways. This involvement includes providing available data and information such as the current and projected locations of sensitive receptors relative to transportation infrastructure;
- Work with air agencies including CARB and the air districts in the TCAG region to support their work in monitoring the progress on reducing exposure to emissions of PM10 and PM2.5 for sensitive receptors, including schools, hospitals, and residences within 500 feet of high-traffic volume roadways;
- Work with stakeholders to identify planning and development practices that are effective in reducing health impacts to sensitive receptors; and

[51] South Coast Association of Governments, *Final Program Environmental Impact Report 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy, Appendix D.* December 2015.

- Share information on all of the above efforts with stakeholders, member cities, counties and the public.

MM-AIR-2(b): Consistent with the provisions of Section 15091 of the *State CEQA Guidelines*, TCAG has identified mitigation measures capable of avoiding or reducing the significant effects regarding exposure of sensitive receptors to substantial pollutant concentrations that are within the jurisdiction and responsibility of local agencies (land use projects) and implementing agencies (transportation projects). Where the Lead Agency has identified that a project has the potential for significant effects, the Lead Agency can and should consider the measures that have been identified by SJVAPCD, CARB, and air district(s), or other comparable measures (such as those included in General Plans or other land use regulations), to reduce health risks below SJVAPCD significance thresholds.

Lead agencies can and should identify appropriate measures, to be incorporated into project building design for residential, school, and other sensitive uses located within 500 feet (or other appropriate distance as may be identified by CARB) of freeways, heavily travelled arterials, railways and other sources of DPM and known or suspected carcinogens. The measures should include but not be limited to the following:

- The project sponsor should retain a qualified air quality consultant to prepare a health risk assessment (HRA) in accordance with CARB and OEHHA requirements to determine the exposure of project residents/occupants/users to stationary source and mobile source emissions prior to issuance of a demolition, grading, or building permit. The HRA should be submitted to the Lead Agency for review and approval. The sponsor should implement the approved HRA recommendations, if any.

- The project sponsor should implement the following features that have been found to reduce the air quality risk to sensitive receptors and should be included in the project construction plans. These should be submitted to the appropriate agency for review and approval prior to the issuance of a demolition, grading, or building permit and ongoing.

  - Do not locate sensitive receptors near distribution center's entry and exit points.
  - Do not locate sensitive receptors in the same building as a perchloroleythene dry cleaning facility.
  - Maintain a 50-foot buffer from a typical gas dispensing facility (under 3.6 million gallons of gas per year).
  - Install, operate, and maintain in good working order a central heating and ventilation (HV) system or other air take system in the building, or in each individual residential unit, that meets the efficiency standard of the MERV 13. The HV system should include the following features: Installation of a high efficiency filter and/or carbon filter-to-filter particulates and other chemical

matter from entering the building. Either HEPA filters or ASHRAE 85 percent supply filters should be used.

- Retain a qualified HV consultant or HERS rater during the design phase of the project to locate the HV system based on exposure modeling from the mobile and/or stationary pollutant sources.
- Maintain positive pressure within the building.
- Achieve a performance standard of at least one air exchange per hour of fresh outside filtered air.
- Achieve a performance standard of at least 4 air exchanges per hour of recirculation
- Achieve a performance standard of 0.25 air exchanges per hour of in unfiltered infiltration if the building is not positively pressurized.
- Maintain, repair and/or replace HV system or prepare an Operation and Maintenance Manual for the HV system and the filter. The manual should include the operating instructions and maintenance and replacement schedule. This manual should be included in the CC&R's for residential projects and distributed to the building maintenance staff. In addition, the sponsor should prepare a separate Homeowners Manual. The manual should contain the operating instructions and maintenance and replacement schedule for the HV system and the filters. It should also include a disclosure to the buyers of the air quality analysis findings.
- Private (individual and common) exterior open space areas, including playgrounds, patios, and decks, should either be shielded from stationary sources of air pollution by buildings or otherwise buffered to further reduce air pollution exposure for project occupants.

Level of Significance After Mitigation

Because this PEIR evaluates impacts at the programmatic level, all project circumstances are not foreseeable and therefore, even with implementation of **Mitigation Measure AIR-2(a)** and **AIR-2(b**), impacts would remain significant and unavoidable and these mitigation measures may not be feasible or effective for some projects. No additional feasible mitigation measures are available to reduce significant and unavoidable impacts beyond those identified in this PEIR.

Impact AIR-3 **Conflict with or obstruct implementation of the applicable air quality plan: Projected long-term emissions from all sources (stationary and mobile) would be considered significant if they are not consistent with the applicable air quality management plans and state implementation plan.**

The 2018 RTP/SCS would result in a less than significant impact to air quality related to the potential to conflict with or obstruct implementation of the adopted SIP/AQMPs/Attainment Plans because the projected long-term emissions are in alignment with the local SIP/AQMPs as demonstrated in the transportation conformity analysis, found in the appendices to the 2018 RTP/SCS.[52] The emissions resulting from the Plan are within the applicable emissions budgets as stated in the SIP/AQMPs for each nonattainment or maintenance area for all milestone, attainment, and planning horizon year. See conformity discussion in **Impact AIR-1** for further details. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Level of Significance After Mitigation

Less than significant.

Impact AIR-4 **Expose a substantial number of people to objectionable odors.**

Odor sources such as wastewater treatment facilities, landfills, and agricultural operations, are controlled by county and city odor ordinances and air district rules that prohibit nuisance odors and identify enforcement measures to reduce odor impacts to nearby receptors. These ordinances and rules are enforced by the air pollution control districts and local law enforcement. As such impacts would be less than significant.

52 2018 Tulare County Regional Transportation Plan/Sustainable Communities Strategy. Appendix 41.

Mitigation Measures

None required.

Level of Significance After Mitigation

Less than significant.

4.3.4 CUMULATIVE EFFECTS

The 2018 RTP/SCS is a cumulative plan by design that integrates transportation investments with land use strategies for an entire region. As such, the analysis of air quality impacts presented above is inherently a cumulative analysis compliant with the requirements of CEQA. However, 2018 RTP/SCS would contribute to additional air quality impacts beyond Tulare County. The cumulative analysis impact area for air quality consists of the San Joaquin Valley Air Basin.

Within the cumulative impact analysis area, implementation of the 2018 RTP/SCS combined with cumulative development outside the region has the potential to result in significant air quality impacts occurring outside Tulare County, which would be considered a significant cumulative impact. As discussed above, implementation of the 2018 RTP/SCS would have significant air quality impacts (**Impact AIR-1** and **Impact AIR-2**). Air emissions from other counties in the San Joaquin Valley Air Basin would add to these significant cumulative impacts.

The 2018 RTP/SCS contribution to these impacts would be cumulatively considerable. Implementation of **Mitigation Measures MM-AIR-1(a)** and **MM-AIR 2(a)** through **MM-AIR-2(b)** would reduce the 2018 RTP/SCS contribution to cumulative transportation impacts; however, the Plan's contribution to these impacts would remain cumulatively considerable.