# 3.3 Air Quality

This section assesses the local and regional air quality impacts of implementing the proposed Visalia General Plan. This analysis focuses on criteria air pollutants and toxic air contaminants. Greenhouse gases (GHGs) are evaluated in Section 3.4: Energy and Greenhouse Gases.

## Environmental Setting

This section provides a discussion of the existing conditions and applicable regulations related to air quality in the study area. Information below is drawn from the relevant oversight agencies which are the San Joaquin Valley Air Pollution Control District (SJVPACD), the California Air Resources Board (ARB), and the U.S. Environmental Protection Agency (EPA).

### PHYSICAL SETTING

Air quality is affected by the rate, amount, and location of pollutant emissions, and the associated meteorological conditions that influence pollutant movement and dispersal. Atmospheric conditions, including wind speed, wind direction, and air temperature, in combination with local surface topography (i.e., geographic features such as mountains and valleys), determine the effect of air pollutant emissions on local air quality.

#### Climate, Meteorology, and Topography

The City of Visalia is located in Tulare County near the southern end of San Joaquin Valley Air Basin (SJVAB), which includes the counties of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and the western portion of Kern. The SJVAB is approximately 250 miles long, and an average of 35 miles wide; creating a bowl-like shape. The valley air basin is bounded on the east by the Sierras, on the west by the Coast Ranges, and on the south by the Tehachapi mountains. At the northern end of the valley air basin is the Sacramento Valley. The bowl shaped topography inhibits movement of pollutants out of the valley.[1]

The SJVAB is characterized by a Mediterranean Climate averaging 260 sunny days per year, with hot, dry summers, often exceeding 100 degrees Fahrenheit, and rainfall mainly occurring only in the winter. Generally, the higher the temperature, the more ozone is formed; and during the winter months when there is less sunlight to drive the photochemical reaction, ozone levels are lower. Due to the climate present in the valley air basin, the dispersion of pollutants is limited by persistent temperature inversions, which occur when a layer of warm air traps cooler air beneath it.

[1] San Joaquin Valley Air Pollution Control District 2012a.

These inversions inhibit the vertical mixing of air, which traps emissions and pollutants below in the air basin. Air above and below the inversion base does not mix because of differences in air density; warm air above the inversion is less dense than the cool air below, which prevents air exchange. Ozone and its precursors will mix and react to produce higher concentrations under an inversion, and inversions trap and hold directly emitted pollutants like carbon monoxide (CO). Particulate matter (PM) concentrations are also directly related to inversion layers due to the limitation of mixing space. In the wintertime, fog can be present, which creates extremely strong inversions, and inhibits the vertical mixing of pollutant.[2]

Wind patterns also play an important role in dispersing pollutants. Wind acts as a pollutant disperser through the mixing and transport of pollutants to other locations in the valley air basin. The topographic features of the valley air basin restrict air movement and channel the air mass towards the southeastern end of the valley. During the summer, wind usually originates at the north end of the basin and flows in a south-southeasterly direction through the basin, during the winter months, wind occasionally originates from the south end of the basin and flows in a north-northwesterly direction. During the winter months, there are many days when the wind is very weak, which when combined with low inversion layers, create conditions conducive to high CO and PM10 concentrations. Diurnal wind cycles in the valley air basin add to the complexity of regional wind flow and pollutant transport.[3]

Precipitation and fog also affect pollutant concentrations in the valley air basin. Clouds and fog block the solar radiation necessary for ozone formation. CO is slightly water-soluble, so fog and precipitation tend to reduce atmospheric CO concentrations. Precipitation also assists in "washing" PM10 from the atmosphere. Most precipitation in the valley air basin occurs during the winter months, and precipitation during the summer months is rare. Precipitation on the valley floor and the Sierra Nevada in the valley air basin decreases from north to south. Average annual precipitation for the valley floor is 9.25 inches. Fog also occurs mostly in the winter. Fog can help to lower CO and nitrogen oxide ($NO_X$) concentrations, but it can also assist in the formation of secondary particulates such as ammonium sulfate. These secondary particulates are believed to be a significant contributor of winter season violations of the PM standards.[4]

## Air Pollutants of Concern

The federal and state governments have established national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS), respectively, for the six criteria pollutants: ozone, CO, lead, nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), and PM, which consists of PM that is 10 microns in diameter or less (PM10) and PM that is 2.5 microns in diameter or less (PM2.5).

Ozone and $NO_2$ are generally considered to be "regional" pollutants, as these pollutants or their precursors—reactive organic gases (ROG) and $NO_X$—affect air quality on a regional scale. Pollu-

[2] Ibid.

[3] Ibid.

[4] Ibid.

tants such as CO, $SO_2$, and lead are considered to be local pollutants that tend to accumulate in the air locally. PM is considered to be a localized pollutant as well as a regional pollutant. Brief descriptions of these pollutants are provided below. Toxic air contaminants (TACs) and Valley Fever are also discussed below.

#### *Ozone*

Ozone, or smog, is photochemical oxidant that is formed when ROG and $NO_X$ (both by-products of the internal combustion engine) react with sunlight. Ozone poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Additionally, ozone has been tied to crop damage, typically in the form of stunted growth and premature death. Ozone can also act as a corrosive, resulting in property damage such as the degradation of rubber products is a respiratory irritant that can cause severe ear, nose, and throat irritation and increases susceptibility to respiratory infections. It is also an oxidant that causes extensive damage to plants through leaf discoloration and cell damage. It can cause substantial damage to other materials as well, such as synthetic rubber and textiles.

#### *Reactive Organic Gases*

Reactive organic gases are compounds made up primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of ROG are emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROG but rather by reactions of ROG to form secondary pollutants such as ozone.

#### *Nitrogen Oxides*

Nitrogen oxides are a family of highly reactive gases that are a primary precursor to the formation of ground-level ozone, and react in the atmosphere to form acid rain. The two major forms of $NO_X$ are nitric oxide (NO) and nitrogen dioxide ($NO_2$). NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. $NO_2$ is a reddish-brown irritating gas formed by the combination of NO and oxygen. $NO_X$ acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens

#### *Carbon Monoxide*

Carbon Monoxide is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. In the project area, high CO levels are of greatest concern during the winter, when periods of light winds combine with the formation of ground-level temperature inversions from evening through early morning. These conditions trap pollutants near the ground, reducing the dispersion of vehicle emissions. Moreover, motor vehicles exhibit increased CO emission rates at low air temperatures. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation.

#### *Particulate Matter*

Particulate matter consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized. Inhalable course particles, or

PM10, include the particulate matter with a diameter of 10 microns (10 millionths of a meter or 0.0004 inch) or less. Inhalable fine particles, or PM2.5, have a diameter of 2.5 microns (i.e., 2.5 millionths of a meter or 0.0001 inch) or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind on arid landscapes also contributes substantially to local particulate loading. Both PM10 and PM2.5 may adversely affect the human respiratory system, especially in those people who are naturally sensitive or susceptible to breathing problems.

#### *Sulfur Dioxide*

$SO_2$ is a combustion product of sulfur or sulfur-containing fuels such as coal and oil, which are restricted in the SJVAB. Sulfur oxides ($SO_X$) are a family of colorless, pungent gases that include $SO_2$ and are formed primarily by combustion of sulfur-containing fossil fuels (mainly coal and oil), metal smelting, and other industrial processes. SOx can react to form sulfates, which significantly reduce visibility. SOx is also a precursor to particulate matter formation. Its health effects include breathing problems and may cause permanent damage to lungs. $SO_2$ is an ingredient in acid rain, which can damage trees, lakes and property, and can also reduce visibility.

#### *Lead*

Leaded gasoline (which has been phased out), paint (houses, cars), and manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neuron-toxic health effects for which children are at special risk. Some lead-containing chemicals cause cancer in animals. Lead exposure is most serious for young children because they absorb lead more easily than adults do, and they are more susceptible to its harmful effects. Even low-level exposure may harm the intellectual development, behavior, size, and hearing of infants. During pregnancy, and especially in the last trimester, the developing fetus is at particular risk from maternal lead exposure, with low birth weight and slowed postnatal neurobehavioral development noted.[5]

#### *Toxic Air Contaminants*

TACs are pollutants that may result in an increase in mortality or serious illness, or that may pose a present or potential hazard to human health. Health effects of TACs include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that lead to death. In 1998, following a 10-year scientific assessment process, the ARB identified PM from diesel-fueled engines—commonly called diesel particulate matter (DPM)—as a TAC. Compared to other air toxics ARB has identified, DPM emissions are estimated to be responsible for about 70% of the total ambient air toxics risk.[6]

The ARB has also identified asbestos as a TAC based on its classification as a known cancer causing pollutant. Asbestos occurs naturally in ultramafic rock (which includes serpentine). When this material is used in unpaved surfacing and disturbed by vehicles and other means, dust containing naturally occurring asbestos (NOA) can be generated.

[5] U.S. Environmental Protection Agency 2000.

[6] California Air Resources Board 2000

***Valley Fever***

Valley Fever is not an air pollutant, but is a disease caused by inhaling *Coccidioides* fungus spores. The spores are found in soil and become airborne when the soil is disturbed. After the fungal spores have settled in the lungs, they change into a multicellular structure called a spherule. Valley Fever symptoms generally occur within 2 to 3 weeks of exposure. Approximately 60 percent of Valley Fever cases are mild and display flu-like symptoms or no symptoms at all. Of those who are exposed and seek medical treatment, the most common symptoms are fatigue, cough, chest pain, fever, rash, headache, and joint aches.

## Air Pollution Sources and Air Quality Inventory

The City is home to many industries, processes, and actions that generate emissions of criteria pollutants. The ARB compiles an emissions inventory for all sources of emissions within Tulare County, in which the city resides. This inventory is used by SJVAPCD for regional air quality planning purposes and is the SJVAB for the region's air quality plans, and includes such sources as stationary (e.g., landfills, electric utilities, mineral processes); area-wide (e.g., farming operations, construction/demolition activities, residential fuel combustion); and mobile (e.g., automobiles, aircraft, off-road equipment).

Estimates of emissions for the City in 2008 (latest year in which data are available) were extrapolated from the Tulare County inventory based on the percent of the total County population residing in the City. In 2008, the population of Tulare County was 422,343, and the population of the City was 119,643; therefore, the population of the city is approximately 28% of the total population of Tulare County. City emissions were therefore assumed to be 28% of the total Tulare County emissions. The 2008 criteria pollutant inventory for the City is summarized in **Table 3.3-1.**

**Table 3.3-1: 2008 Criteria Pollutant Inventory for the City of Visalia[7] (tons per day)[a]**

| *Emission Category* | *ROG* | *CO* | *$NO_X$* | *PM10* | *PM2.5* |
|---|---|---|---|---|---|
| Fuel Combustion | 0.10 | 0.68 | 1.21 | 0.10 | 0.10 |
| Waste Disposal | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 |
| Cleaning and Surface Coating | 0.32 | 0.00 | 0.00 | 0.00 | 0.00 |
| Petroleum Production and Marketing | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 |
| Industrial Processes | 0.39 | 0.01 | 0.04 | 1.02 | 0.78 |
| Solvent Evaporation | 1.92 | 0.00 | 0.00 | 0.00 | 0.00 |
| Miscellaneous Processes | 5.31 | 11.65 | 0.68 | 8.27 | 2.62 |
| Onroad Motor Vehicles | 2.61 | 23.03 | 7.06 | 0.29 | 0.22 |
| Other Mobile Sources | 2.00 | 10.08 | 4.22 | 0.25 | 0.22 |

[a] Tulare County emissions scaled by 28%.

[7] California Air Resources Board 2009

## Ambient Pollutant Concentrations

Existing air quality conditions in the project area can be characterized in terms monitoring data collected in the region. Monitoring data concentrations are typically expressed in terms of parts per million (ppm) or micrograms per cubic meter (μg/m$^3$). The only air quality monitoring station located in the City is the Visalia monitoring station, located at 310 North Church Street in Visalia, which monitors for ozone, $NO_2$, PM10, and PM2.5. The closest monitoring station that measures CO levels is located in Fresno at 4706 East Drummond Avenue. Air monitoring data from this monitoring station is summarized in **Table 3.3-2**.

**Table 3.3-2: Air Quality Data Summary (2010-2012) for the Planning Area**[8]

| | *Monitoring Data by Year* | | |
|---|---|---|---|
| *Pollutant* | *2010* | *2011* | *2012* |
| Ozone [a] | | | |
| Highest 1-hour average (ppm) | 0.122 | 0.119 | 0.111 |
| Days above State 1-Hour Standard | 15 | 4 | 9 |
| Highest 8-hour average (ppm) | 0.104 | 0.084 | 0.094 |
| Days above State 8-hour Standard | 57 | 33 | 60 |
| Days above Federal 8-Hour Standard | 34 | 17 | 37 |
| Particulate Matter less than 10 microns (PM10) [a] | | | |
| Highest 24-hour average (μg/m$^3$) | 90.8 | 78.1 | 75.7 |
| Estimated Days above State Standard[2] | 59.4 | 68.8 | 89.3 |
| Estimated Days above Federal Standard | 0 | 0 | 0 |
| Annual Average (μg/m$^3$) | 34.0 | 34.0 | 38.1 |
| Particulate Matter less than 2.5 microns (PM2.5) [a] | | | |
| Highest 24-hour average (μg/m$^3$) | 61.6 | 73.2 | 76.2 |
| Estimated Days above Federal Standard | 3 | 9 | 7 |
| Annual Average (μg/m$^3$) | 13.5 | 16.0 | 14.7 |
| Carbon Monoxide (CO) [b] | | | |
| Highest 1-hour average (ppm) | 2 | 2.8 | 2.9 |
| Highest 8-hour average (ppm) | 1.45 | 1.73 | n/a |
| Days above State Standard | 0 | 0 | 0 |
| Days above Federal Standard | 0 | 0 | 0 |
| Expected peak day concentration (ppm) | 2.12 | 2.15 | n/a |
| Nitrogen Dioxide ($NO_2$)[a] | | | |
| Maximum 1-hour Concentration | 77.0 | 58.0 | 61.0 |

[8] California Air Resources Board 2014, U.S. Environmental Protection Agency, 2014

**Table 3.3-2: Air Quality Data Summary (2010-2012) for the Planning Area[8]**

| | *Monitoring Data by Year* | | |
|---|---|---|---|
| *Pollutant* | *2010* | *2011* | *2012* |
| Annual Average Concentration | 13 | 12 | 12 |
| Days exceeding state standard | 0 | 0 | 0 |
| Days exceeding national standard | 0 | 0 | 0 |

$\mu g/m^3$ = micrograms per cubic meter
ppm = parts per million
[a] Data for Visalia - North Church Street monitoring station.
[b] Data for Fresno - 4706 East Drummond Avenue monitoring station.

## Attainment Status

Local monitoring data (see **Table 3.3-2**) are used to designate areas as nonattainment, maintenance, attainment, or unclassified for the NAAQS and CAAQS. The four designations are further defined as:

- Nonattainment—assigned to areas where monitored pollutant concentrations consistently violate the standard in question.
- Maintenance—assigned to areas where monitored pollutant concentrations exceeded the standard in question in the past but are no longer in violation of that standard.
- Attainment—assigned to areas where pollutant concentrations meet the standard in question over a designated period of time.
- Unclassified—assigned to areas were data are insufficient to determine whether a pollutant is violating the standard in question.

**Table 3.3-3** summarizes the attainment status of Tulare County with regard to the NAAQS and CAAQS.

**Table 3.3-3: Federal and State Attainment Status for Tulare County**[9]

| *Pollutant* | *Federal Standards* | *State Standards* |
|---|---|---|
| Ozone – one hour | No Federal Standard | Severe Nonattainment |
| Ozone – eight hour | Extreme Nonattainment | Nonattainment |
| PM10 | Maintenance | Nonattainment |
| PM2.5 | Nonattainment | Nonattainment |
| CO | Attainment/Unclassified | Attainment |
| $NO_2$ | Attainment/Unclassified | Attainment |
| $SO_2$ | Attainment/Unclassified | Attainment |
| Lead | Attainment/Unclassified | 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 |

### Sensitive Receptors

Some receptors are considered more sensitive than others to air pollutants. The reasons for greater than average sensitivity include pre-existing health problems, proximity to emissions source, or duration of exposure to air pollutants. Land uses such as schools, children's day care centers, hospitals, and convalescent homes are considered to be more sensitive than the general public to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress and other air quality-related health problems. Parks and playgrounds are considered moderately sensitive to poor air quality because persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality; however, exposure times are generally far shorter in parks and playgrounds than in residential locations and schools, which typically reduces overall exposure to pollutants. Residential areas are considered more sensitive to air quality conditions than commercial and industrial areas because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions.

The location of land uses where sensitive receptors are present should be carefully evaluated. State law restricts the siting of new schools within 500 feet of a freeway, urban roadways with 100,000 vehicles/day, or rural roadways with 50,000 vehicles with some exceptions. ARB has published advisory recommendations on siting new sensitive land uses, with the same guidelines as the state school limitation.[10]

## REGULATORY SETTING

This section summarizes federal, state, and local regulations that apply to air quality. The air quality management agencies of direct importance in the county are the EPA, ARB, and SJVAPCD.

[9] California Air Resources Board 2012; U.S. Environmental Protection Agency 2013

[10] California Air Resources Board, 2005.

EPA has established federal air quality standards for which ARB and SJVAPCD have primary implementation responsibility. ARB and SJVAPCD are also responsible for ensuring that state air quality standards are met.

## Federal

### *Clean Air Act*

The Clean Air Act (CAA) was first enacted in 1963 and has been amended numerous times in subsequent years (1965, 1967, 1970, 1977, and 1990). The CAA establishes federal air quality standards, known as NAAQS, and specifies future dates for achieving compliance. The CAA also mandates that the state submit and implement a State Implementation Plan (SIP) for local areas not meeting those standards. The plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA identify specific emission-reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. The sections of the CAA that would most substantially affect the development of the Project include Title I (Nonattainment Provisions) and Title II (Mobile-Source Provisions).

Title I provisions were established with the goal of attaining the NAAQS for criteria pollutants. **Table 3.3-4** shows the NAAQS currently in effect for each criteria pollutant. The CAAQS (discussed below) are also provided for reference.

**Table 3.3-4: National and State Ambient Air Quality Standards[11]**

| | | | *National Standards[a]* | |
|---|---|---|---|---|
| *Criteria Pollutant* | *Average Time* | *California Standards* | *Primary* | *Secondary* |
| Ozone | 1-hour | 0.09 ppm | None | None |
| | 8–hour | 0.070 ppm | 0.075 ppm | 0.075 ppm |
| Particulate Matter (PM10) | 24-hour | 50 μg/m³ | 150 μg/m³ | 150 μg/m³ |
| | Annual mean | 20 μg/m³ | None | None |
| Fine Particulate Matter (PM2.5) | 24-hour | None | 35 μg/m³ | 35 μg/m³ |
| | Annual mean | 12 μg/m³ | 12.0 μg/m³ | 15 μg/m³ |
| Carbon Monoxide | 8-hour | 9.0 ppm | 9 ppm | None |
| | 1-hour | 20 ppm | 35 ppm | None |
| Nitrogen Dioxide | Annual mean | 0.030 ppm | 0.053 ppm | 0.053 ppm |
| | 1-hour | 0.18 ppm | 0.100 ppm | None |
| Sulfur Dioxide[b] | Annual mean | None | 0.030 ppm | None |
| | 24-hour | 0.04 ppm | 0.014 ppm | None |
| | 3-hour | None | None | 0.5 ppm |
| | 1-hour | 0.25 ppm | 0.075 ppm | None |
| Lead | 30-day average | 1.5 μg/m³ | None | None |
| | Calendar quarter | None | 1.5 μg/m³ | 1.5 μg/m³ |
| | 3-month average | None | 0.15 μg/m³ | 0.15 μg/m³ |
| Sulfates | 24-hour | 25 μg/m³ | None | None |
| Hydrogen Sulfide | 1-hour | 0.03 ppm | None | None |
| Vinyl Chloride | 24-hour | 0.01 ppm | None | None |

μg/m³ = micrograms per cubic meter
ppm = parts per million

[a] National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.

[b] The final 1-hour $SO_2$ rule was signed June 2, 2010. The annual and 24-hour $SO_2$ standards were revoked in that same rulemaking. However, these standards remain in effect until 1 year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

[11] California Air Resources Board 2013.

#### *Nonroad Diesel Rule*

The EPA established a series of increasingly strict emission standards for new offroad diesel equipment, onroad diesel trucks, and harbor craft. New construction equipment used for the project, including heavy-duty trucks, off-road construction equipment, and tugboats will be required to comply with the emission standards.

### State

#### *California Clean Air Act*

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

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

The California CAA substantially adds to the authority and responsibilities of air districts. The California CAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. The California CAA also emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The California CAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish traffic control measures (TCMs).

#### *State Tailpipe Emission Standards*

To reduce emissions from off-road diesel equipment, onroad diesel trucks, and harbor craft, ARB established a series of increasingly strict emission standards for new engines. New construction equipment used for the project, including heavy duty trucks, off-road construction equipment, tugboats, and barges, will be required to comply with the standards.

#### *Carl Moyer Program*

The Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) is a voluntary program that offers grants to owners of heavy-duty vehicles and equipment. The program is a partnership between ARB and the local air districts throughout the state to reduce air pollution emissions from heavy-duty engines. Locally, the air districts administer the Carl Moyer Program.

#### *Toxic Air Containment Regulations*

California regulates TACs primarily through the Toxic Air Contaminant Identification and Control Act (Tanner Act) and the Air Toxics "Hot Spots" Information and Assessment Act of 1987 ("Hot Spots" Act). In the early 1980s, ARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Act created California's program to reduce exposure to air toxics. The "Hot Spots" Act supplements the Tanner 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 ARB identified diesel particulate emissions (DPM) as a TAC in 1998.[12] Shortly thereafter, the ARB approved a comprehensive Diesel Risk Reduction Plan to reduce emissions from both new and existing diesel-fueled engines and vehicles[13] . The goal of the plan is to reduce DPM (respirable particulate matter) emissions and the associated health risk by 75 percent in 2010 and by 85 percent by 2020. The plan identifies 14 measures that ARB will implement over the next several years. Because the ARB measures would be enacted before any phase of construction, the Project would be required to comply with applicable diesel control measures.

### Local

#### *San Joaquin Valley Air Pollution Control District*

The SJVAPCD has local air quality jurisdiction in Tulare County. Primary responsibilities of the air district include overseeing stationary-source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality-related sections of environmental documents required by CEQA. SJVAPCD is also responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws and for ensuring that NAAQS and CAAQS are met. The air district's 2002 *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI) provides lead agencies, consultants, and project applicants with uniform procedures for analyzing construction- and operational-related pollutant emissions from new development.[14]

#### *Air Quality Management Plans*

The SJVAPCD has adopted several attainment plans in an attempt to achieve state and federal air quality standards. The air district must continuously monitor its progress in implementing attainment plans and must periodically report to the ARB and the EPA. It must also periodically revise its attainment plans to reflect new conditions and requirements in accordance with schedules mandated by the CCAA and CAAA.

The 2004 Extreme Ozone Attainment Demonstration Plan for 1-hour Ozone was adopted on October 8, 2004, submitted to EPA on November 15, 2004, and the Clarifications for the 2004 Ex-

[12] California Air Resources Board 1998.

[13] California Air Resources Board 2000.

[14] The SJVAPCD has issued an update to their GAMAQI in May 2012. However, this update is considered draft and has not been approved by the SJVAPCD's Governing Board. Consequently, the current GAMAQ, which was adopted on January 10, 2002, is utilized in this air quality study.

treme Ozone Attainment Demonstration Plan for 1-hour Ozone was adopted on August 21, 2008. The EPA proposed approval and partial disapproval of the 2004 Extreme Ozone Attainment Demonstration Plan for 1-hour Ozone on June 30, 2009.[15] In September 2013, the SJVAPCD adopted the 2013 plan for the Revoked 1-hour Ozone standard. The EPA approval of the 2013 Ozone plan is forthcoming[16]. The 2007 Ozone Plan for 8-hour ozone was adopted on April 30, 2007, and the Amendment to the 2007 Ozone Plan to Extend the Rule Adoption Schedule for Organic Waste Operations was adopted on December 18, 2008.[17] A future 8-hour ozone plan, which will address the 75 ppb standard, is anticipated to be due to the EPA in 2015/2016[18].

The 2007 PM10 Maintenance Plan and Request for Redesignation was approved by ARB on October 25, 2007, and there are no PM10 Plans under development.[19] The 2013 PM2.5 Plan was adopted on December 20, 2013. This plan addresses EPA's 24-hour PM2.5 standard of 35 $\mu g/m^3$, which was established by EPA in 2006.[20]

The CO Attainment Plan was last updated in 2004 by ARB,[21] and it is not planned to be updated in the future unless violations of the CO NAAQS and/or CAAQS occur.

#### *Indirect Source Review*

Rule 9510, *Indirect Source Review*, fulfills the SJVAPCD's emission reduction commitments in the PM10 and Ozone Attainment Plans through emission reductions from the construction and use of development projects required design features and onsite measures. Rule 9510 requires emission reductions associated with construction and operational activities for projects subject to the rule. For construction emissions, Rule 9510 requires a 20% reduction of total $NO_X$ emissions and a 45% reduction of the total PM10 exhaust emissions. For operational emissions, Rule 9510 requires 33.3% of the project's operational baseline $NO_X$ and 50% of the project's operational baseline PM10 emissions be reduced over a period of 10 years. Transportation or transit projects exceeding 2.0 tons of construction-related $NO_X$ or PM10 emissions are required to reduce $NO_X$ emissions by 20 percent and PM10 exhaust emissions by 45 percent, compared to the statewide fleet average. Operational emissions associated with transportation and transit projects are not subject to Rule 9510. If the required emissions reductions are not achieved through traditional means, projects may purchase offsets on a per ton basis from the SJVAPCD through Rule 9510's off-site emission reduction fee program to comply with the requirements of Rule 9510. Rule 9510 applies to any applicant that seeks to gain a final discretionary approval for a development project, or any portion thereof, which upon full buildout will include any one of the following:

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[15] San Joaquin Valley Air Pollution Control District n.d. (a).

[16] Ibid

[17] Ibid

[18] Ibid

[19] San Joaquin Valley Air Pollution Control District n.d. (b).

[20] San Joaquin Valley Air Pollution Control District 2012b.

[21] California Air Resources Board 2011.

- 50 residential units;
- 2,000 square feet of commercial space;
- 25,000 square feet of light industrial space;
- 100,000 square feet of heavy industrial space;
- 20,000 square feet of medical office space;
- 39,000 square feet of general office space;
- 9,000 square feet of educational space;
- 10,000 square feet of government space;
- 20,000 square feet of recreational space; or
- 9,000 square feet of space not identified above.

Compliance with Rule 9510 is separate from the CEQA process, although the control measures used to comply with Rule 9510 may be used to mitigate CEQA impacts.

# Impact Analysis

## SIGNIFICANCE CRITERIA

Implementation of the proposed Project would have a potentially significant impact if it would:

**Criterion 1**: Conflict with or obstruct implementation of the applicable air quality plan.

**Criterion 2**: Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

**Criterion 3**: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).

**Criterion 4:** Expose sensitive receptors to substantial pollutant concentrations.

**Criterion 5:** Create objectionable odors affecting a substantial number of people.

According to CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make significance determinations for potential impacts on environmental resources. As discussed above, SJVAPCD is responsible for ensuring that state and federal ambient air quality standards are not violated within the valley air basin. The Air District has adopted thresholds of significance to improve air quality and facilitate attainment of state and federal standards. The SJVAPCD's thresholds of significance, as

indicated in their guidance documents[22] and through consultation with SJVAPCD staff,[23] are summarized below.

- Project operations or construction would generate more than 10 tons/year of ROG or NOx.
- Project operations or construction would generate more than 15 tons/year of PM10 or PM2.5.
- Project-related emissions of CO would exceed NAAQS or CAAQS.
- The project would not comply with the SJVAPCD's Regulation VIII regarding PM emissions from construction activities.
- The project would result in more than 10 cases of cancer in 1 million.

## METHODOLOGY AND ASSUMPTIONS

The impact analysis evaluates development that is reasonably foreseeable under the proposed General Plan. Although the proposed General Plan would not directly cause development, the land use policies contained within the proposed General Plan prescribe acceptable land uses throughout the Planning Area. Implementation of the proposed land use designations could, therefore, indirectly lead to types of development considered acceptable under the proposed General Plan. A summary of the methodology used to evaluate each air quality criterion is provided below.

### Consistency with Air Quality Plans

Consistency of the proposed General Plan with SJVAPCD's adopted air quality plans was determined by comparing the growth projected with implementation of the proposed General Plan to growth projected for the Planning Area by the SJVAPCD and Tulare County Association of Governments (TCAG).

### Violate Air Quality Standards (Project and Cumulative)

Emissions generated as a result of construction activities were analyzed qualitatively because the level of construction activities and construction schedule associated with implementation of the proposed General Plan cannot be determined at this time and would be speculative.

Emissions resulting from operation of the proposed land uses associated with the proposed General Plan were analyzed using standard and accepted software tools, techniques, and emission factors. Mobile sources and roadways (an areawide source of particulate matter) make the greatest contribution to air quality issues in the Planning Area and therefore serve as the primary input into the calculation of air quality impacts. Ozone precursors (ROG and $NO_X$), CO, PM10, and PM2.5 from changes in regional vehicle miles traveled (VMT) were estimated using exhaust emission factors from Caltrans' CT-EMFAC emissions model (version 5.0) and daily VMT data devel-

[22] San Joaquin Valley Air Pollution Control District 2002

[23] Siong pers. comm.

oped by Omni-Means and TCAG.[24] The VMT data was provided in 5 mile-per-hour (mph) speed bins (or ranges) for peak and non-peak periods for the following trip types:

- Internal–Internal (I-I) – Trips that begin and end in the City
- Internal–External (I-X) – Trips that begin in the City and end outside the City
- External–Internal (X-I) – Trips that begin outside the City and end inside the City
- External-External (X-X) – Trips that begin and end outside the City

Consistent with the Regional Targets Advisory Committee (RTAC) recommendations, VMT estimates for all "I-I" trips were weighted by 1, whereas VMT estimates for "I-X" and "X-I" trips were weighted by 0.50. Trips entirely external to the City ("X-X") were excluded from the analysis. The RTAC factors account for the fact that a jurisdiction can influence internal trips, but only has some control over trips that begin and end within the jurisdiction. However, a jurisdiction has no control over through trips, which is why these are excluded from the analysis.

**Table 3.3-5** summarizes the traffic data used in the emissions modeling. Criteria pollutants were calculated by multiplying the peak and off-peak VMT estimates by the appropriate exhaust emission factors provided by CT-EMFAC. Re-entrained road dust was calculated assuming 0.3 and 0.1 grams of PM10 and PM2.5, respectively, are generated per vehicle-mile.[25] Total emissions during the peak and off-peak hours were added to obtain a daily emissions estimate. The resulting emissions were annualized using a factor of 347.[26] Please refer to Appendix D for the CT-EMFAC emission factors.

[24] Martin pers. comm.

[25] United States Environmental Protection Agency 2011.

[26] Schmal pers. comm. (a)

**Table 3.3-5: Daily Vehicle Miles Traveled**

| Speed (mph) | | Existing (2012) | | 2030 No Project | | 2030 Proposed General Plan | |
|---|---|---|---|---|---|---|---|
| | | Peak | Off-Peak | Peak | Off-Peak | Peak | Off-Peak |
| 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 10 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 15 | 1 | 1 | 0 | 1 | 0 | 1 |
| 15 | 20 | 1,043 | 1,578 | 1,797 | 2,552 | 1,526 | 2,450 |
| 20 | 25 | 6,681 | 9,133 | 13,859 | 14,320 | 9,080 | 12,223 |
| 25 | 30 | 62,155 | 82,789 | 133,416 | 131,318 | 89,861 | 105,114 |
| 30 | 35 | 139,872 | 190,145 | 347,774 | 416,495 | 277,837 | 339,843 |
| 35 | 40 | 189,561 | 266,882 | 351,847 | 548,633 | 345,864 | 503,384 |
| 40 | 45 | 155,682 | 233,213 | 218,809 | 369,095 | 241,844 | 365,264 |
| 45 | 50 | 94,074 | 145,275 | 129,367 | 211,152 | 134,663 | 211,706 |
| 50 | 55 | 42,480 | 66,211 | 53,310 | 97,457 | 51,488 | 101,883 |
| 55 | 60 | 12,895 | 20,596 | 12,675 | 23,909 | 14,373 | 27,597 |
| 60 | 65 | 6,289 | 9,028 | 6,651 | 10,482 | 11,308 | 15,888 |
| 65 | 70 | 3,384 | 4,766 | 6,434 | 7,784 | 9,699 | 11,772 |
| **Total** | | **714,115** | **1,029,615** | **1,275,910** | **1,833,198** | **1,187,542** | **1,697,125** |

*Source: Omni-Means and TCAG, 2014*

### Expose Receptors to Substantial Pollution Concentrations

The analysis of health risks associated with the proposed General Plan considers sensitive receptor exposure to CO hotspots, TACs, and Valley Fever, as described further below.

#### *CO Hotspots*

The effects of localized CO hotspots were evaluated through CO dispersion modeling consistent with the Transportation Project-Level Carbon Monoxide Protocol, which was developed for Caltrans by the Institute of Transportation Studies at the University of California, Davis.[27] The CO protocol details a qualitative step-by-step procedure to determine whether project-related CO concentrations have a potential to generate new air quality violations, worsen existing violations, or delay the attainment of NAAQS or CAAQS for CO.

[27] Garza et al. 1997.

*Roadway and Traffic Conditions*

CO hotspots were evaluated at roadway intersections within the study area for existing[28] and design year (2030) conditions for the proposed General Plan. Modeled traffic volumes and operating conditions for the proposed General Project and No Project alternative were obtained from the traffic data prepared by the project traffic engineers, Omni Means.[29]

Ambient CO concentrations near study area roadways were modeled for the proposed General Plan and No Project alternative using CALINE4. One-hour maximum CO concentrations were modeled using PM peak hour traffic volumes. Because CALINE4 does not estimate 8-hour concentrations, the modeled 1-hour CO concentrations were scaled by a persistence factor of 0.7 to obtain 8-hour concentrations. A persistence factor is a standard mechanism of relating concentrations from one averaging period to another. To ensure a conservative analysis, it was assumed that the hourly traffic during an 8-hour sampling period was equal to the 1-hour commuting peak flowrate.

CO modeling was conducted at the following six roadway intersections, which were identified in the traffic study as having the highest peak-hour volumes or lowest level of service (LOS):

- Mineral King Avenue/Akers Street
- Hillsdale Avenue/Akers Street
- Houston Avenue/Ben Maddox way
- Walnut Avenue/Shirk Road
- Visalia Road/Akers Street
- Riggin Avenue/Shirk Road

CALINE4 roadway geometry for each modeled intersection was based on satellite confirmation of the number of approach and departing lanes at each intersection. A 12-foot lane width was assumed; to ensure a conservative analysis, medians, sidewalks, and other buffers were not included in the roadway and receptor geometry.

**Vehicle Emission Rates**

Vehicle emission rates were determined using the ARB's EMFAC2011 emission rate program. Free-flow traffic speeds were adjusted to 5.0 miles per hour to represent a worst-case scenario. EMFAC2011 estimates emission rates from approximately 50 vehicle classes. A composite emission factor for a typical Tulare County vehicle fleet was calculated by weighting vehicle emissions by the relative amount of vehicle miles traveled (VMT) expected for each vehicle class.

[28] Existing conditions for the CO hotspot analysis is based on 2012 traffic data provided by the transportation engineers, Omni-Means.

[29] Schmal pers. comm. (b)

### Receptor Locations

CO concentrations were estimated at four receptor locations located at each of the six intersections, for a total of 24 receptors. CALINE4 guidance specifies that the model should not be used to estimate pollutant concentrations within three meters of the traveled way; this assumption could result in an artificially high CO concentration since it is unlikely a person will be located three meters from a roadway for one to eight hours. However, to ensure the most conservative analysis, the receptors were placed three meters from the traveled way at each intersection corner. A standard receptor elevation of 1.8 meters was used consistent with CO protocol guidance.[30]

### Meteorological Conditions

Meteorological inputs to the CALINE4 model were determined consistent with Caltrans' 1998 Air Quality Technical Analysis Notes.[31] The meteorological conditions used in the modeling represent a calm winter period. Worst-case wind angles were modeled to estimate conservative CO concentrations at each receptor. The meteorological inputs include the following: wind speed of 0.5 meters per second, ground-level temperature inversion (atmospheric stability class G), wind direction standard deviation equal to five degrees, ambient temperature of 32°F, and a mixing height of 1,000 meters.

### Toxic Air Containments and Valley Fever

Exposure of new sensitive receptors under the proposed General Plan to Valley Fever and existing and planned sources of TAC were analyzed qualitatively. The analysis also evaluated the location of new development relative to areas known to contain NOA. General Plan policies and compliance with SJVAPCD regulations to minimize potential health-related impacts were considered.

### Expose Receptors to Odors

Exposure of new sensitive receptors to odors was analyzed qualitatively based on the locations of development and existing and proposed odor sources.

## IMPACT SUMMARY

| *Proposed Project Impact* | *Mitigation Measure* | *Significance after Mitigation* |
|---|---|---|
| Conflict with or obstruct implementation of the applicable air quality plan | None required | Less than significant |
| Violate any air quality standard or contribute substantially to an existing or projected air quality violation. | None available | Significant and unavoidable |
| Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors). | None available | Significant and unavoidable |

[30] Garza et al. 1997.

[31] Caltrans 1998.

| | | |
|---|---|---|
| Expose sensitive receptors to substantial pollutant concentrations | None required | Less than significant |
| Create objectionable odors affecting a substantial number of people | None required | Less than significant |

## IMPACTS AND MITIGATION MEASURES

### Impact

**3.3-1 Implementation of the proposed Visalia General Plan could conflict with or obstruct implementation of the applicable air quality plan.** ***(Less Than Significant)***

The CAA requires areas with air quality violating the NAAQS to prepare an air quality control plan referred to as the SIP. The SIP contains the strategies and control measures that states will use to attain the NAAQS. The California CAA requires attainment plans to demonstrate a five-percent-per-year reduction in nonattainment air pollutants or their precursors, averaged every consecutive three-year period, unless an approved alternative measure of progress is developed. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date. As previously discussed, SJVAPCD has adopted several attainment plans to achieve NAAQS or CAAQS. Typically, a general plan is deemed inconsistent with air quality plans if it would result in population, VMT, or emissions that exceed the estimates included in the applicable air quality plan such that exceedances would hinder achievement of NAAQS and CAAQS.

TCAG is the regional planning agency for Tulare County and addresses regional issues relating to transportation, economy, community development, and environment. With regard to air quality planning, TCAG adopted the 2011 Regional Transportation Plan (RTP) in July 2010. TCAG is currently working on the 2014 RTP that will outline transportation improvements and other related planning elements through 2040. The RTP is based, in part, on growth projections prepared by the County and incorporated cities. The RTP and its growth projections are utilized by SJVPACD to prepare air quality emissions forecasts for their attainment plans.

Implementation of the proposed General Plan would allow for an increase in population, housing, and employment within the Planning Area. **Table 3.3-6** compares the 2030 population and housing projections for the City with the proposed General Plan to the RTP growth forecasts. As shown in **Table 3.3-6**, implementation of the proposed General Plan would result in more population, but fewer housing units over TCAG's projections for the City.

**Table 3.3-6: 2030 Proposed General Plan and TCAG Comparisons for the City of Visalia**[32]

| *Document* | *Population* | *Households* |
|---|---|---|
| TCAG RTP (without proposed General Plan) | 207,582 | 74,855 |
| Proposed General Plan | 209,600 | 72,100 |
| *Difference* | *+2,018* | *-2,755* |

An additional measurement tool in determining consistency with the air quality attainment plans is to identify how a project accommodates the expected increase in population or employment. Generally, if a project is planned in a way that results in a reduction in motor vehicle trips and VMT, then the project is consistent with the air quality attainment plan.

As shown in **Table 3.3-5**, implementation of the proposed General Plan would reduce daily VMT relative to the No Project alternative, which is equivalent to the VMT projection assumed in the 2011 RTP. Development associated with proposed General Plan would be consistent with TCAG's draft Sustainable Communities Strategy. Specifically, the proposed General Plan would encourage infill, promote mixed-use and walkable communities, and provide a variety of housing types for all income levels. The proposed General Plan would also promote sustainability by preserving open space, expanding the trail system, and providing a circulation system that reduces dependency on automobiles.

The proposed General Plan proactively addresses regional air quality in a manner consistent with policies and measures outlined in SJVAPCD's air quality attainment plan. Although the proposed General Plan would result in increased population (but fewer housing units) housing relative to TCAG projections, the mixed-use development associated with the proposed General Plan would be consistent the region's draft SCS, which promotes mixed-use and walkable downtown communities. In addition, the proposed General Plan includes numerous goals, objectives, and policies that would help to support mixed-use development and alternative forms of transportation within the City. Therefore, the proposed General Plan is considered consistent with SJVAPCD's air quality attainment plans. This impact is considered less than significant.

### *Proposed General Plan Policies that Reduce the Impact*

The following policies from the *Air Resources Element* will help directly reduce VMT in the City.

AQ-P-8 Update the Zoning Ordinance to strictly limit the development of drive-through facilities, only allowing them in auto-oriented areas and prohibiting them in Downtown and East Downtown.

AQ-P-11 Continue to work in conjunction with the San Joaquin Valley Air Pollution Control District and others to put in place additional Transportation Control

[32] Brady pers. comm.

Measures that will reduce vehicle travel and improve air quality and to implement Air Quality Plans.

AQ-P-13 Promote and expand the trip-reduction program for City employees to reduce air pollution and emissions of greenhouse gas.

The following policies from the *Land Use Element* support sustainable growth, including infill and mixed-used development, which will help reduce VMT in the City:

LU-P-44, LU-P-45, LU-P-46, LU-P-52, LUT-P-55, LUT-P-56, LUT-P-57, LU-P-72, LU-P-74, LUT-P-78, LUT-P-80, LUT-P-83, LUT-P-85, LUT-P-100, and LU-P-108

The following policies from the *Land Use Element* support pedestrian-oriented design, which will help reduce VMT in the City: LU-P-74, LU-P-62, LU-P-63, LU-P-66, LU-P-91, and LU-P-93

The following policy from the *Parks, Schools, Community Facilities, and Utilities Element* supports biking and walking, which will help reduce VMT in the City: PSCU-P-11

The following policies from the *Circulation Element* promote transit and non-motorized transportation (e.g., bicycling), which will help reduce VMT in the City: T-P-1, T-P-29, T-P-30, T-P-31, T-P-32, T-P-33, T-P-34, T-P-35, T-P-36, T-P-37, T-P-38, T-P-44, T-P-45, T-P-46, T-P-47, T-P-48, T-P-49, T-P-50, T-P-51, T-P-52, T-P-53, and T-P-54.

### *Mitigation Measures*

None required.

### Impact

**3.3-2 Implementation of the proposed Visalia General Plan could violate any air quality standard or contribute substantially to an existing or projected air quality violation (Significant and Unavoidable).**

### Construction

Buildout of the proposed General Plan would increase single- and multi-family housing units, industrial land uses, mixed-use commercial space, and public land uses over existing conditions (see General Plan Section 2.3, "The Proposed General Plan Land Use Diagram and Land Use Classifications" for a complete discussion). The addition of new development would result in construction emissions. However, because specific construction activities are not yet known, a quantitative analysis of emissions is currently not possible.

Construction emissions would temporarily generate CO, ROG, $NO_X$, PM10, and PM2.5 emissions, which could affect short-term ambient air quality. Primary emission sources include mobile and stationary construction equipment exhaust, employee vehicle exhaust, dust from clearing land, exposed soil eroded by wind, and ROG from architectural coatings and asphalt paving. Construction-related emissions would vary substantially depending on the level of activity, length of

the construction period, specific construction operations, types of equipment, number of personnel, wind and precipitation conditions, and soil moisture content.

The proposed General Plan includes numerous policies that will help reduce emissions from construction activities. For example, AQ-P-9 specifically requires implement of Best Management Practices (BMPs) and mitigation of short-term construction impacts on a case-by-case basis. AQ-P-2 also requires new subdivisions develop and submit grading permits, in conformance with the SJVAPCD's fugitive dust rules. While these and other policies will reduce construction-related emissions, because the proposed General Plan would be built over a 20-year period, it is not possible to determine the magnitude of construction emissions from each development project or the magnitude of emissions reductions that would be achieved by these policies. Accordingly, it is uncertain whether construction activities would result in emissions that exceed SJVAPCD thresholds.

Future development would undergo subsequent review, including in many cases CEQA review, and would evaluate project-specific impacts. In addition, construction projects would be subject to regulatory measures, including but not limited to SJVAPCD rules pertaining to fugitive dust (Regulation VIII), indirect sources (Rule 9510), visibility of emissions (Rule 4101), nuisance activities (Rule 4102), and limiting ROG content in architectural coatings (Rule 4601). The SJVAPCD has determined that compliance with Regulation VIII is sufficient to minimize fugitive dust impacts from construction to a less than significant level.[33]

With respect to ROG and $NO_X$, policies outlined in the proposed General Plan, compliance with SJVAPCD rules will lessen potential impacts. However, given the lack of specifics regarding construction projects at this time, it is uncertain whether construction activities would result in ROG and $NO_X$ emissions that exceed SJVAPCD thresholds. Accordingly, this impact is considered significant and unavoidable.

### Operation

Buildout of the proposed General Plan would facilitate development within the City that would allow additional residential units and commercial/office/industrial space by the year 2030 over existing conditions. Buildout of the General Plan would result in criteria pollutant emissions in different quantities compared to existing conditions. Operation of these proposed land uses would result in emissions from both area and mobile sources. Area sources include emissions from natural gas combustion, wood burning, landscaping activities, consumer products (e.g. personal care products), and periodic paint emissions from facility upkeep. Common area emission sources are natural gas and wood combustion for energy and heating, criteria pollutants from landscaping equipment, and ROGs from personal household product use and painting.

Operational impacts would primarily result from local and regional vehicle emissions and vehicle travel generated by future population and employment growth associated with buildout of the proposed General Plan. Motor vehicles travelling throughout the Planning Area would result in emissions of ozone precursors (ROG and $NO_X$), CO, PM10, and PM2.5 emitted primarily as vehi-

[33] San Joaquin Valley Air Pollution Control District 2002.

cle exhaust. **Table 3.3-7** summarizes mobile source emissions, relative to the existing (2012) conditions, that would be generated by the No Project and proposed General Plan in 2030. As shown in the table, total annual emissions of ROG and $NO_X$ from mobile sources are projected to exceed SJVAPCD's project-based thresholds in both 2012 and 2030 under both the No Project and the proposed General Plan. Despite increased VMT (shown in **Table 3.3-5**), emissions are expected to be lower in 2030 than in 2012, as a result of emission control measures adopted by ARB and SJVAPCD, so that on a net basis, the General Plan would not have a significant impact concerning these pollutants.

However, net annual mobile source emissions in 2030 compared to existing conditions would exceed the significance thresholds for PM10 and PM2.5 as a result of increased dust raised from paved roadways with increased traffic, resulting in a significant impact. While this impact would be less under the proposed General Plan than under the No Project alternative (due to proposed General Plan buildout network resulting in lower VMT), the increase under the proposed Plan relative to the existing conditions would result in a significant impact.

Although mobile sources would be the primary contributor to operational emissions, an increase in area source emssions is also anticipated with General Plan buildout. Emissions will be generated from a variety of stationary sources including the natural gas systems, landscape maintenance equipment, and wood-burning fireplaces. Information regarding specific development projects would be needed in order to quantify the area and indirect source emissions. A variety of industrial and commercial processes (e.g., dry cleaning, etc.) allowed under the proposed General Plan would also be expected to release emissions; some of which could be of a hazardous nature. These emissions are controlled at the local and regional level through permitting and would be subject to further study and a health risk assessment as part of environmental review for new master plan or specific plan areas, or for proposed development that is not consistent with earlier EIRs covering specific plan areas.

Policies within the proposed General Plan would help to reduce mobile source emissions by promoting mixed-use, transit-oriented development, alternative forms of transportation. It is likely that these policies would reduce trips and VMT beyond what is shown in the emissions modeling. Other policies would also improve energy efficiency, which will reduce building energy consumption and area source emissions. However, without a quantitative analysis of reductions anticipated under the General Plan policies, there is insufficient data to determine whether operational emissions would be below SJVAPCD thresholds. Future development proposed under the proposed General Plan would undergo subsequent review, including in many cases CEQA review, and would evaluate project-specific impacts. However, no mitigation is feasible to reduce this impact to less than significant. This impact is therefore considered significant and unavoidable.

**Table 3.3-7: Estimated Mobile Source Emissions Associated with General Plan Buildout (Tons per Year)**

| *Emissions Source* | *ROG* | *NOx* | *CO* | *PM10* | *PM2.5* |
|---|---|---|---|---|---|
| **City of Visalia On-Road Vehicle Emissions** | | | | | |
| Existing (2012) | 185 | 768 | 1,873 | 246 | 78 |
| **Proposed General Plan** | | | | | |
| 2030 Proposed General Plan | 106 | 285 | 899 | 384 | 108 |
| Incremental Change from Existing | -79 | -483 | -974 | +139 | +30 |
| **No Project** | | | | | |
| 2030 No Project | 115 | 309 | 976 | 414 | 116 |
| Incremental Change from Existing | -70 | -459 | -897 | +168 | +38 |
| SJVAPCD Threshold | 10 | 10 | N/A | 15 | 15 |
| Significant? (Yes or No) | No | No | N/A | **Yes** | **Yes** |

*Source: CT-EMFAC modeling*

### *Proposed General Plan Policies that Reduce the Impact*

The following policies from the *Air Resources Element* will help directly reduce area and mobile sources in the Planning Area.

AQ-P-2 Require use of Best Management Practices (BMPs) to reduce particulate emission as a condition of approval for all subdivisions, development plans and grading permits, in conformance with the San Joaquin Valley Air Pollution Control District Fugitive Dust Rule.

AQ-P-3 Support implementation of the San Joaquin Valley Air Pollution Control District's regulations on the use of wood-burning fireplaces, as well as their regulations for the installation of EPA-certified wood heaters or approved wood-burning appliances in new residential development and a "No Burn" policy on days when the air quality is poor.

AQ-P-4 Support the San Joaquin Valley Air Pollution Control District's "change-out" program, which provides incentives to help homeowners replace old word-burning fireplaces with EPA-certified non wood-burning appliances.

AQ-P-7 Be an active partner with the Air District in its "Spare the Air" program. Encourage businesses and residents to avoid pollution-producing activities such as the use of fireplaces and wood stoves, charcoal lighter fluid, pesticides, aerosol products, oil-based paints, and automobiles and other gasoline engines on days when high ozone levels are expected, and promote low-emission vehicles and alternatives to driving.

AQ-P-8 Update the Zoning Ordinance to strictly limit the development of drive-through facilities, only allowing them in auto-oriented areas and prohibiting them in Downtown and East Downtown.

AQ-P-9 Continue to mitigate short-term construction impacts and long-term stationary source impacts on air quality on a case-by-case basis and continue to assess air quality impacts through environmental review. Require developers to implement Best Management Practices (BMPs) to reduce air pollutant emissions associated with the construction and operation of development projects.

AQ-P-11 Continue to work in conjunction with the San Joaquin Valley Air Pollution Control District and others to put in place additional Transportation Control Measures that will reduce vehicle travel and improve air quality and to implement Air Quality Plans.

AQ-P-12 Where feasible, replace City vehicles with those that employ low-emission technology.

AQ-P-13 Promote and expand the trip-reduction program for City employees to reduce air pollution and emissions of greenhouse gas.

The following policies from the *Land Use Element* and *Parks, Schools, Community Facilities, and Utilities Element* support energy conservation, which will help reduce building energy consumption and associated area source emissions: LU-P-38 and PSCU-P-14.

The policies described under Impact 3.3-1 from the *Land Use Element, Parks, Schools, Community Facilities, and Utilities Element,* and *Circulation Element* would reduce VMT and associated mobile source emissions.

### *Mitigation Measures*

As stated above, the City will implement a variety of policies designed to address air quality issues. Future compliance with SJVAPCD Rules and Regulations as part of environmental review for new master plan or specific plan areas, or for proposed development that is not consistent with earlier EIRs covering specific plan areas will also help to reduce air quality emissions associated with individual projects. However, total emissions associated with development of the proposed General Plan would still exceed SJVAPCD thresholds for PM10 and PM2.5. No additional feasible mitigation measures are currently available to reduce this impact to a less-than-significant level. Consequently, the impact remains significant and unavoidable.

### Impact

**3.3-3 Implementation of the proposed Visalia General Plan could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors) *(Significant and Unavoidable).***

Tulare County is currently designated nonattainment for federal ozone and PM2.5, maintenance for federal PM10, and nonattainment for state ozone, PM10, and PM2.5 from past and present projects. Reasonably foreseeable growth could continue to exceed air quality standards or contribute to an existing or projected air quality exceedance. The SJVAPCD's GAMAQI indicates that a violation of the SJVAPCD's construction or operational thresholds of significance would result in a project-level and cumulative impact.[34]

The SJVAPCD has determined that compliance with the dust control requirements of Regulation VIII is sufficient to mitigate fugitive dust impacts to a less-than significant level. Construction-related ROG and $NO_X$ emissions could potentially exceed SJVAPCD's quantitative thresholds of significance. Because the SJVAB is in nonattainment for ozone, for which ROG and $NO_X$ are precursors, construction activities associated with the proposed General Plan could result in cumulatively considerable and significant impact.

Operation of development proposed under the proposed General Plan could also result in a cumulative air quality impact. As shown in **Table 3.3-7**, implementation of the proposed General Plan would exceed SJVAPCD's operational thresholds for PM10 and PM2.5. The proposed General Plan includes numerous policies that aim to improve local and regional air quality by promoting mixed-use transit-oriented development, walkable communities, and alternative forms of transportation. However, because emissions would likely exceed SJVAPCD's thresholds and no feasible mitigation is available, operational emissions associated with the proposed General Plan would result in a cumulatively considerable and significant impact.

#### *Proposed General Plan Policies that Reduce the Impact*

The following policies from the *Air Resources Element* will help directly reduce area and mobile sources in the City.

AQ-P-2 Require use of Best Management Practices (BMPs) to reduce particulate emission as a condition of approval for all subdivisions, development plans and grading permits, in conformance with the San Joaquin Valley Air Pollution Control District Fugitive Dust Rule.

AQ-P-3 Support implementation of the San Joaquin Valley Air Pollution Control District's regulations on the use of wood-burning fireplaces, as well as their regulations for the installation of EPA-certified wood heaters or approved wood-

[34] San Joaquin Valley Air Pollution Control District 2002.

burning appliances in new residential development and a "No Burn" policy on days when the air quality is poor.

AQ-P-4 Support the San Joaquin Valley Air Pollution Control District's "change-out" program, which provides incentives to help homeowners replace old word-burning fireplaces with EPA-certified non wood-burning appliances.

AQ-P-7 Be an active partner with the Air District in its "Spare the Air" program. Encourage businesses and residents to avoid pollution-producing activities such as the use of fireplaces and wood stoves, charcoal lighter fluid, pesticides, aerosol products, oil-based paints, and automobiles and other gasoline engines on days when high ozone levels are expected, and promote low-emission vehicles and alternatives to driving.

AQ-P-8 Update the Zoning Ordinance to strictly limit the development of drive-through facilities, only allowing them in auto-oriented areas and prohibiting them in Downtown and East Downtown.

AQ-P-9 Continue to mitigate short-term construction impacts and long-term stationary source impacts on air quality on a case-by-case basis and continue to assess air quality impacts through environmental review. Require developers to implement Best Management Practices (BMPs) to reduce air pollutant emissions associated with the construction and operation of development projects.

AQ-P-11 Continue to work in conjunction with the San Joaquin Valley Air Pollution Control District and others to put in place additional Transportation Control Measures that will reduce vehicle travel and improve air quality and to implement Air Quality Plans.

AQ-P-12 Where feasible, replace City vehicles with those that employ low-emission technology.

AQ-P-13 Promote and expand the trip-reduction program for City employees to reduce air pollution and emissions of greenhouse gas.

The policies described under Impact 3.3-2 from the *Land Use Element*, *Parks, Schools, Community Facilities, and Utilities Element*, and *Circulation Element* would help reduce cumulative construction and operational emissions associated with the buildout of the proposed General Plan.

### *Mitigation Measures*

Refer to discussion under Impact 3.3-2.

## Impact

**3.3-4 Implementation of the proposed Visalia General Plan could expose sensitive receptors to substantial pollutant concentrations (Less than Significant).**

## Carbon Monoxide Hot-Spots

Elevated levels of CO concentrations are typically found in areas with significant traffic congestion. CO is a public health concern because it can cause health problems such as fatigue, headache, confusion, dizziness, and even death. Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures. CO emission rates from motor vehicles have been declining and are expected to continue to decline in the future because of ARB's Mobile Source Program, which supports replacement of older, higher emitting vehicles with newer vehicles, and increasingly stringent inspection and maintenance programs, as well as other regulatory requirements, such as Assembly Bill 1493 (Pavley).

Buildout of the General Plan could increase traffic congestion in the Planning Area, which could create CO hotspots. CO concentrations at the following six intersections were evaluated using the CALINE4 model and traffic data provided by Omni-Means.[35] These intersections were selected because they either had the worst level of service (LOS), or are expected to experience worsening in LOS and traffic volumes with implementation of the General Plan.

- Mineral King Avenue/Akers Street
- Hillsdale Avenue/Akers Street
- Houston Avenue/Ben Maddox way
- Walnut Avenue/Shirk Road
- Visalia Road/Akers Street
- Riggin Avenue/Shirk Road

The selected intersections were assumed to be representative of the worst traffic conditions within the project area. **Table 3.3-8** presents the results of the CO hot-spot modeling for existing (2012) and buildout (2030) conditions for the proposed General Plan.

[35] Schmal pers. comm. (b)

**Table 3.3-8: Modeled CO Levels Measured at Receptors in the Vicinity of Affected Intersections for Existing and Future (2030) Conditions**

| *Intersection* | *Receptor* | *Existing* | | *2030 Proposed General Plan* | |
|---|---|---|---|---|---|
| | | *1-hour CO[a,b]* | *8-hour CO[a,c]* | *1-hour CO[a,b]* | *8-hour CO[a,c]* |
| Mineral King Avenue/Akers Street | 1 | 6.4 | 4.3 | 3.4 | 2.2 |
| | 2 | 7.0 | 4.7 | 3.5 | 2.2 |
| | 3 | 6.2 | 4.1 | 3.4 | 2.2 |
| | 4 | 7.5 | 5.0 | 3.7 | 2.4 |
| Hillsdale Avenue/Akers Street | 5 | 5.6 | 3.7 | 3.3 | 2.1 |
| | 6 | 6.4 | 4.3 | 3.5 | 2.2 |
| | 7 | 5.6 | 3.7 | 3.2 | 2.0 |
| | 8 | 6.8 | 4.5 | 3.6 | 2.3 |
| Houston Avenue/Ben Maddox way | 9 | 5.4 | 3.6 | 3.2 | 2.0 |
| | 10 | 5.1 | 3.3 | 3.2 | 2.0 |
| | 11 | 5.7 | 3.8 | 3.3 | 2.1 |
| | 12 | 6.3 | 4.2 | 3.5 | 2.2 |
| Walnut Avenue/Shirk Road | 13 | 4.9 | 3.2 | 3.2 | 2.0 |
| | 14 | 4.8 | 3.1 | 3.2 | 2.0 |
| | 15 | 4.9 | 3.2 | 3.2 | 2.0 |
| | 16 | 4.4 | 2.9 | 3.1 | 1.9 |
| Visalia Road/Akers Street | 17 | 4.3 | 2.8 | 3.0 | 1.9 |
| | 18 | 4.4 | 2.9 | 3.1 | 1.9 |
| | 19 | 4.5 | 2.9 | 3.1 | 1.9 |
| | 20 | 4.5 | 2.9 | 3.1 | 1.9 |
| Riggin Avenue/Shirk Road | 21 | 4.1 | 1.6 | 3.1 | 1.6 |
| | 22 | 4.2 | 2.7 | 3.1 | 1.9 |
| | 23 | 4.1 | 2.6 | 3.1 | 1.9 |
| | 24 | 3.9 | 2.5 | 3.1 | 1.9 |

[a] Background concentrations of 2.5 and 1.6 ppm were added to the modeling 1- and 8-hour results, respectively.

[b] The federal and state 1-hour standards are 35 and 20 ppm, respectively.

[c] The federal and state 8-hour standards are 9 and 9.0 ppm, respectively.

Source: CALINE4 modeling.

**Table 3.3-8** indicates that implementation of the proposed General Plan would not result in violations of the state or federal 1- or 8-hour CO standards. At all modeled intersections, CO concentrations would decrease or remain the same. Moreover, the proposed General Plan includes several policies that will reduce traffic congestion and associated CO emissions at affected roadways. Consequently, the impact of traffic conditions from the proposed General Plan on ambient CO levels is considered less than significant.

### Toxic Air Contaminants

TACs are a category of air pollutants that have been shown to have an impact on human health, but are not classified as criteria pollutants. Light industrial, industrial, and airport industrial land uses are proposed under the proposed General Plan. Potential TACs associated with these uses could include, but are not limited to, solvents, diesel exhaust, and metals.[36] Buildout of the proposed General Plan could also include gas stations and dry cleaning services. These uses release benzene and percholorethylene, respectively, which are highly regulated carcinogens.[37] Siting these facilities near existing receptors or siting new residential land uses near existing facilities or freeways could increase exposure to TACs. Exposure to DPM from mobile sources is of special concern because health studies show an association between particulate matter and premature mortality in those with existing cardiovascular disease.[38]

In general, TAC concentrations are typically highest near the emissions source and decline with increased distance. The ARB recommends avoiding siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day. Similar recommendations are provided for other source categories, including dry cleaners and gas stations. The proposed General Plan includes a policy that prohibits locating new sensitive receptors within 500 feet of SR 99 and SR 198. The document also includes a policy that would create a buffer between sensitive receptors and industrial land uses. In addition, policies to reduce traffic trips and congestion would reduce traffic congestion and promote alternative forms of transportation and carpooling, thus helping to minimize high levels of pollutants associated with increased vehicle traffic and congestion. Taken together, these policies would help reduce exposure to diesel exhaust and its associated health risk. This impact is considered less than significant.

### Naturally Occurring Asbestos

Disturbance of rock and soil that contains NOA can result in consequent exposure to the public. Asbestos most commonly occurs in serpentine rock, and its parent material, ultramafic rock. These rock types are abundant in the Sierra foothills. NOA has been identified in Tulare County, but ultramafic rocks are not common in the Planning Area.[39]

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[36] California Air Resources Board 2005.

[37] Ibid.

[38] Ibid.

[39] Jennings 2007.

Construction activities in areas known to contain ultramafic rocks may expose workers and the general public to NOA. The proposed 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 help reduce exposure to NOA and associated health risks. This impact is considered less than significant.

### Valley Fever

Disturbance of soil containing Coccidioides fungus could expose the general public to spores known to cause Valley Fever. Over 75 percent of Valley Fever cases in California have been in people who live in the San Joaquin Valley. Tulare County has one of the highest Valley Fever rates, with more than 10 cases reported per 100,000 people per year between 2008 and 2012.[40] Construction activities in areas known to contain Coccidioides fungus may expose workers and the general public to spores that could result in Valley Fever. Compliance with SJVAPCD Regulation VIII would reduce the risk of contracting Valley Fever. This impact is considered less than significant.

#### *Proposed General Plan Policies that Reduce the Impact*

The following policies from the *Air Resources Element* will help directly reduce sensitive receptor exposure to TACs, NOA, and/or Valley Fever.

AQ-P-1 Amend the Zoning Ordinance to prohibit locating new "sensitive receptor" uses—hospitals, residential care facilities and child care facilities—within 500 feet of a limited access state highway (SR 99 and SR 198), except as provided by approved master plans.

AQ-P-5 When asbestos has been identified in the preliminary soils report, require all new development and public works projects to comply with all provisions of State and regional ATCM regulations for control of airborne asbestos emissions relating to construction, road maintenance, and grading activities.

AQ-P-6 Amend the Street Tree Ordinance to promote use of plants and trees that are efficient pollutant absorbers.

AQ-P-10 Develop public information regarding high- and low-pollen producing landscape species, to be made available at City Hall and other relevant locations throughout the City. Work with Chamber of Commerce, local landscape architects, nursery contractors, and arborists to promote landscaping with low-pollen plants.

The policies described under Impact 3.3-1 from the *Land Use Element, Parks, Schools, Community Facilities, and Utilities Element*, and *Circulation Element* that target VMT and congestion reduction would help reduce CO concentrations and hot-spots.

[40] California Health and Human Services Agency 2013.

### *Mitigation Measures*

None required.

### Impact

**3.3-5 Implementation of the proposed Visalia General Plan could create objectionable odors affecting a substantial number of people.** ***(Less than Significant)***

The SJVAPCD has identified certain types of land uses as being commonly associated with odors. Based on these land uses, the SJVAPCD has established screening criteria that identifies reasonable buffer distances by odor-generating facility in which the location of sensitive receptors located within these distances could result in significant odor impacts. **Table 3.3-11** summarizes the SJVAPCD's odor screening distances as a function of facility type.

**Table 3.3-11: SJVAPCD Project Screening Trigger Levels For Potential Odor Sources**[41]

| *Type of Facility* | *SJVAPCD Recommended Buffer Distance* |
|---|---|
| Wastewater Treatment Facilities | 2 miles |
| Sanitary Landfill | 1 mile |
| Transfer Station | 1 mile |
| Composting Facility | 1 mile |
| Petroleum Refinery | 2 miles |
| Asphalt Batch Plant | 1 mile |
| Chemical Manufacturing | 1 mile |
| Fiberglass Manufacturing | 1 mile |
| Painting/Coating Operations (e.g. auto body shops) | 1 mile |
| Food Processing Facility | 1 mile |
| Feed Lot/Dairy | 1 mile |
| Rendering Plant | 1 mile |

Under General Plan buildout, there is a potential that sensitive receptors could be located within the buffer distances identified in **Table 3.3-11**, which could result in an odor impact. In addition, new odor generating facilities sited closer to existing sensitive receptors than the buffer distances identified in **Table 3.3-11** could expose existing sensitive receptors to odors from the proposed facilities. However, the land uses associated with the proposed General Plan do not include any uses identified by the SJVAPCD as being associated with odors and therefore would not produce objectionable odors.

Potential odor emitters during construction activities include diesel exhaust, asphalt paving, and the use of architectural coatings and solvents. Construction-related operations near existing re-

[41] San Joaquin Valley Air Pollution Control District 2002.

ceptors would be temporary in nature and construction activities would not be likely to result in nuisance odors that would violate SJVAPCD Rule 4102. Given mandatory compliance with SJVAPCD rules, no construction activities or materials are proposed that would create a significant level of objectionable odors. This impact is considered less than significant.

### *Mitigation Measures*

None required.