

## 4.3. AIR QUALITY

This section includes the following discussion and analysis related to air quality: existing environmental and regulatory setting; criteria and methodology for evaluating impacts; and the results of the impact assessment, including identification of potentially significant impacts and corresponding mitigation measures to avoid or substantially lessen such impacts to the extent feasible. The following discussion is based on the Air Quality Assessment prepared for the PEIR by Illingworth & Rodkin, Inc., in July 2025, which is contained in Appendix B of this PEIR, and its findings are summarized below.

### ***PEIR Scoping Comments***

During the PEIR Scoping Process, the District received two letters containing comments related to air quality (see PEIR Scoping Report in Appendix A of this document). The comments are summarized below.

#### Leadership Counsel for Justice and Accountability

The EIR must include a robust analysis of air quality impacts from the construction and operation of the project, including an analysis of criteria pollutants and the potential for fires associated with energy storage and transmission. It is critical for the EIR to analyze air quality impacts given that this VCIP will be implemented in a region that is already out of compliance with federal air quality standards.

[Potential impacts associated with air quality are addressed below in Section 4.3.3. *Environmental Impact Analysis* under Impacts AQ-1 through AQ-4. Potential impacts associated with potential fires from battery storage systems are addressed in Section 4.9. *Hazards and Hazardous Materials* under Impact HAZ-2.]

The EIR should analyze the human health impacts of air quality changes from the projects in the VCIP and explain the nature and magnitude of the impact. The EIR must not only analyze potential human health impacts for the project but also describe them to give the general public notice as to how their health might be affected.

[Potential impacts associated with human health impacts are addressed below in Section 4.3.3. *Environmental Impact Analysis* under Impacts AQ-3 through AQ-4.]

#### San Joaquin Valley Air Pollution Control District (SJVAPCD)

The comments from SJVAPCD include a discussion of air quality status in the San Joaquin Valley Air Basin, general recommendations regarding methods for conducting the air quality analyses for VCIP, procedures for mitigation, and SJVAPCD rules and regulations regarding permitting. [Potential impacts associated with air quality are addressed below in Section 4.3.3. *Environmental Impact Analysis* under Impacts AQ-1 through AQ-4.]

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## 4.3.1. Environmental Setting

### Air Basin Characteristics

#### Topography

The Plan Area is located in the southwestern portion of the San Joaquin Valley Air Basin. The San Joaquin Valley is surrounded on three sides by mountain ranges that restrict air movement through and out of the basin and, as a result, impede the dispersion of air pollutants from the basin. The flow is further restricted vertically by inversion layers that are common in the San Joaquin Valley Air Basin throughout the year. An inversion layer is created when a mass of warm dry air sits over cooler air near the ground, preventing vertical dispersion of pollutants from the air mass below. These inversions lead to a buildup of ozone and ozone precursor pollutants.

#### Climate

The climate of the Plan Area is characterized by hot dry summers and cool, mild winters. Daytime temperatures in the summer often approach or exceed 100 degrees, with lows in the 60s. In the winter, daytime temperatures are usually in the 50s, with lows around 35 degrees. Radiation fog is common in the winter, and may persist for days. Winds are predominantly up-valley (flowing from the north) in all seasons, but more so in the summer and spring months. This type of flow is usually trapped below marine and subsidence inversions, restricting outflow through the Sierra Nevada and Tehachapi Mountains.

The pollution potential of the San Joaquin Valley is very high. The San Joaquin Valley has one of the most severe air pollution problems in the state and the nation. Surrounding elevated terrain in conjunction with temperature inversions frequently restrict lateral and vertical dilution of pollutants. Abundant sunshine and warm temperatures in late spring, summer, and early fall are ideal conditions for the formation of ozone, where the San Joaquin Valley frequently experiences unhealthy air pollution days. Low wind speeds, combined with low inversion layers in the winter, create a climate conducive to high respirable particulate matter (PM<sub>10</sub>) concentrations.

### Criteria Air Pollutants and their Health Effects

The primary criteria air pollutants that would be emitted by potential VCIP projects include ozone precursors (nitrogen oxides and reactive organic gases), CO, PM<sub>10</sub> and PM<sub>2.5</sub>. Other criteria pollutants, such as Pb and SO<sub>2</sub>, do not require further analysis because they would not be appreciably emitted by the VCIP projects or project traffic, and air quality standards for them are being met throughout the San Joaquin Valley Air Basin. A description of each relevant criteria pollutant (i.e., nitrogen oxides, reactive organic gases, O<sub>3</sub>, CO, PM<sub>10</sub> and PM<sub>2.5</sub>) is provided below, based primarily on information made available by US EPA, the California Air Resources Board (CARB), and the San Joaquin Valley Unified Air Pollution Control District (SJVAPCD).

#### **Ozone (O<sub>3</sub>)**

While O<sub>3</sub> serves a beneficial purpose in the upper atmosphere (stratosphere) by reducing ultraviolet radiation potentially harmful to humans, when it reaches elevated concentrations in the lower atmosphere it can be

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harmful to the human respiratory system and to sensitive species of plants. O<sub>3</sub> concentrations build to peak levels during periods of light winds, bright sunshine, and high temperatures. Ozone is a strong irritant that attacks the respiratory system, leading to lung tissue damage. Short-term O<sub>3</sub> exposure can reduce lung function in children, make people susceptible to respiratory infection, and produce symptoms that cause people to seek medical treatment for respiratory distress. Long-term exposure can impair lung defense mechanisms and lead to emphysema and chronic bronchitis. A healthy person exposed to high concentrations may become nauseated or dizzy, may develop a headache or cough, or may experience a burning sensation in the chest.

O<sub>3</sub> is formed in the atmosphere by a complex series of photochemical reactions that involve “ozone precursors” that consist of two families of pollutants: oxides of nitrogen (NO<sub>x</sub>) (though NO<sub>2</sub> is itself a criteria pollutant) and reactive organic gases (ROG). NO<sub>x</sub> and ROG are emitted from a variety of stationary and mobile sources<sup>1</sup>. In 2007, CARB adopted an 8-hour health-based standard for O<sub>3</sub> of 0.070 parts per million (ppm)<sup>2</sup>. In 2015, the US EPA also revised the 8-hour NAAQS for O<sub>3</sub> to 0.070 ppm.

### **Carbon Monoxide (CO)**

CO is a colorless, odorless, poisonous gas. Carbon monoxide’s health effects are related to its affinity for hemoglobin in the blood. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause dizziness and fatigue, and causes reduced lung capacity, impaired mental abilities and central nervous system function, and induces angina (chest pain caused by reduced blood flow to the heart) in persons with serious heart disease. Primary sources of CO in ambient air are exhaust emissions from passenger cars, light-duty trucks, and residential wood burning. The monitored CO levels in the San Joaquin Valley during the last 10 years have been well below ambient air quality standards.

### **Nitrogen Dioxide (NO<sub>2</sub>)**

The major health effect from exposure to high levels of NO<sub>2</sub> is the risk of acute and chronic respiratory disease. NO<sub>2</sub> is a combustion by-product, but it can also form in the atmosphere by chemical reaction. NO<sub>2</sub> is a reddish-brown colored gas often observed during the same conditions that produce high levels of O<sub>3</sub> and can affect regional visibility. NO<sub>2</sub> is one compound in a group of compounds consisting of oxides of nitrogen (NO<sub>x</sub>). As described above, NO<sub>x</sub> is an O<sub>3</sub> precursor compound. Monitored levels of NO<sub>2</sub> in the San Joaquin Valley are below ambient air quality standards.

### **Particulate Matter (PM)**

Respirable (inhalable) particulate matter (PM<sub>10</sub>) and fine particulate matter (PM<sub>2.5</sub>) consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. PM<sub>10</sub> and PM<sub>2.5</sub> represent fractions of particulate matter that can be inhaled and cause adverse health effects. PM<sub>2.5</sub> (including diesel exhaust particles) is thought to have greater effects on health because minute particles can penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Children are more susceptible to the health risks of PM<sub>2.5</sub> because their immune and respiratory systems are still developing. These fine particulates have been demonstrated to decrease lung

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<sup>1</sup> Stationary air pollutant sources are those regulated by SJVAPCD and mobile sources are those regulated by U.S. EPA and CARB that include cars, trucks, trains, aircraft, watercraft, construction equipment, lawn equipment, etc.

<sup>2</sup> This is the running average of 8 consecutive 1-hour average concentrations of the pollutant.

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function in children. Certain components of PM are linked to higher rates of lung cancer. Very small particles of certain substances (e.g., sulfates and nitrates) can also directly cause lung damage or can contain absorbed gases (e.g., chlorides or ammonium) that may be injurious to health.

Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as mining and demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. In addition to health effects, particulates also can damage materials and reduce visibility. Dust comprised of large particles (diameter greater than 10 microns) settles out rapidly and is more easily filtered by human breathing passages. This type of dust is considered more of a soiling nuisance rather than a health hazard.

The current state PM<sub>10</sub> standard is 20 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) for an annual average<sup>3</sup>. The state 24-hour average<sup>4</sup> standard is 50  $\mu\text{g}/\text{m}^3$ . PM<sub>2.5</sub> standards were first promulgated by the US EPA in 1997 and are currently 35  $\mu\text{g}/\text{m}^3$  for 24-hour exposures. US EPA revoked the annual PM<sub>10</sub> standard due to lack of scientific evidence correlating long-term exposures of ambient PM<sub>10</sub> with health effects. The California Ambient Air Quality Standards (CAAQS) has only an annual average PM<sub>2.5</sub> standard, which is set at 12  $\mu\text{g}/\text{m}^3$ , which is similar to the NAAQS (CARB 2025f). In 2024, U.S. EPA strengthened the annual PM<sub>2.5</sub> standard from 12.0  $\mu\text{g}/\text{m}^3$  to 9.0  $\mu\text{g}/\text{m}^3$ , based on an integrated assessment of an extensive body of new scientific evidence, which improved the body of knowledge regarding PM<sub>2.5</sub>-related health effects.

### **Toxic Air Contaminants**

Besides the "criteria" air pollutants, there are other groups of substances found in ambient air—Hazardous Air Pollutants (HAPs) under the CAA and Toxic Air Contaminants (TACs) under the CCAA. These contaminants tend to be localized and are found in relatively low concentrations in ambient air. However, they can result in adverse chronic health effects if exposure to low concentrations occurs for long periods. They are regulated at the regional, state, and federal level.

HAPs are the air contaminants identified by US EPA as known or suspected to cause cancer, serious illness, birth defects, or death. Many of these contaminants originate from human activities, such as fuel combustion and solvent use. Mobile source air toxics (MSATs) are a subset of the 188 HAPs<sup>5</sup>(US EPA 2024). EPA identified nine compounds with contributions from mobile sources that are among the cancer risk drivers or contributors and non-cancer hazard contributors, based on the 2011 National Air Toxics Assessment (NATA)<sup>6</sup>. The Federal Highway Administration (FHWA 2023) identifies these as 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. FHWA considers these the priority mobile source air toxics,

TACs include all HAPs plus other contaminants identified by CARB. These are a broad class of compounds known to cause morbidity or mortality (e.g., cancer risk). TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners).

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<sup>3</sup> The average of all 24-hour period measurements in a calendar year.

<sup>4</sup> Measured over a 24-hour period of a day.

<sup>5</sup> See U.S. EPA <https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications> accessed March 31, 2025

<sup>6</sup> See U.S. EPA <https://www.epa.gov/national-air-toxics-assessment/2014-nata-assessment-results> accessed on March 31, 2025.

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TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Particulate matter from diesel exhaust is the predominant TAC in urban air and is estimated to represent about 70 percent of the cancer risk from TACs (based on the statewide average). According to CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles (CARB 2025g). This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by CARB, and are listed as carcinogens either under state or federal programs.

CARB reports that recent air pollution studies have shown that diesel exhaust and other cancer-causing toxic air contaminants emitted from vehicles are responsible for much of the overall cancer risk from TACs in California. Particulate matter emitted from diesel-fueled engines, diesel particulate matter (DPM), was found to comprise much of that risk. In 1998, CARB formally identified DPM as a TAC. DPM is of particular concern since it can be distributed over large regions, thus leading to widespread public exposure. The particles emitted by diesel engines are coated with chemicals, many of which have been identified by US EPA as HAPs, and by CARB as TACs. Most diesel exhaust particles (over 90 percent) consist of PM<sub>2.5</sub>. Like other particles of this size, a portion will eventually become trapped within the lungs, possibly leading to adverse health effects. While the gaseous portion of diesel exhaust also contains TACs, CARB's 1998 action was specific to DPM, which accounts for much of the cancer-causing potential from diesel exhaust. California has adopted a comprehensive diesel risk reduction plan to reduce DPM emissions (CARB 2000). The US EPA and CARB adopted low sulfur diesel fuel standards in 2006 that substantially reduced ambient air diesel particulate matter concentrations.

Smoke from residential wood combustion can be a source of TACs. Wood smoke is typically emitted during winter when dispersion conditions are poor. Localized high TAC concentrations can result when cold stagnant air traps smoke near the ground and, with no wind the pollution can persist for many hours, especially in sheltered valleys during winter. Wood smoke also contains a significant amount of PM<sub>10</sub> and PM<sub>2.5</sub>. Wood smoke is an irritant and is implicated in worsening asthma and other chronic lung problems.

## 4.3.2. Regulatory Context

### *Federal*

#### Clean Air Act (CAA)

The federal Clean Air Act (CAA) established ambient air quality standards for different pollutants. Ambient standards specify the concentration of pollutants to which the public may be exposed without adverse health effects. The CAA initially established national ambient air quality standards (NAAQS) for six "criteria" pollutants. These criteria pollutants now include carbon monoxide (CO), ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), respirable particulate matter with a diameter less than 10 microns (PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), and lead (Pb). In 1997, the United States Environmental Protection Agency (US EPA) added fine particulate matter (PM<sub>2.5</sub>) as a criteria pollutant. The air pollutants for which standards have been established are considered the most prevalent air pollutants that are known to be hazardous to human health. Individuals vary widely in their sensitivity to air

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pollutants, and standards are set to protect more pollution-sensitive populations (e.g., children and the elderly). National standards are reviewed and updated periodically based on new health studies.

At the federal level, the US EPA administers and enforces air quality regulations. Federal air quality regulations were developed primarily from implementation of the CAA. Areas with monitored pollutant concentrations that are lower than ambient air quality standards are designated “attainment” on a pollutant-by-pollutant basis. If an area does not meet NAAQS over a set period (three years), US EPA designates it as a “nonattainment” area for that pollutant. US EPA requires states with nonattainment areas to prepare and submit air quality plans showing how the standards would be met. If the states cannot show how the standards would be met, then they must show progress toward meeting the standards. This plan is referred to as the State Implementation Plan (SIP)(US EPA 2025b)<sup>7</sup>. US EPA designates areas as “unclassified” when insufficient data are available to determine the attainment status; however, these areas are typically considered to be in attainment of the standard.

The US EPA also has programs for identifying and regulating hazardous air pollutants. The CAA requires US EPA to set standards for these pollutants and sharply reduce emissions of controlled chemicals. Industries are classified as major sources if they emit certain amounts of hazardous air pollutants. The US EPA also sets standards to control emissions of hazardous air pollutants through mobile source control programs. These include programs that reformulate gasoline, national low emissions vehicle standards, Tier 2 motor vehicle emission standards, gasoline sulfur control requirements, and heavy-duty engine standards.

The San Joaquin Valley Air Basin is subject to major air quality planning programs required by the CAA to address ozone, particulate matter air pollution. The CAA requires that regional planning and air pollution control agencies prepare a regional Air Quality Plan to outline the measures by which both stationary and mobile sources of pollutants can be controlled to achieve all standards within the deadlines specified in the CAA. These plans are submitted to the State of California, which after approval, submits them to US EPA as the SIP.

## **State**

### **California Clean Air Act (CCAA)**

The California Clean Air Act (CCAA) has also established ambient air quality standards for different pollutants. California ambient air quality standards (CAAQS) include the NAAQS pollutants and hydrogen sulfide (H<sub>2</sub>S), sulfates (SO<sub>4</sub>), vinyl chloride (VC), and visibility reducing particles. These additional CAAQS pollutants tend to have unique sources and are not typically examined in environmental air quality assessments. In addition, lead concentrations have decreased dramatically since it was removed from motor vehicle fuels. State standards are reviewed and updated periodically based on new health studies.

The CCAA outlines a program for areas in the state to attain the CAAQS by the earliest practical date. The California Air Resources Board or CARB is the state air pollution control agency and is a part of the California EPA. The California Clean Air Act sets more stringent air quality standards for all of the pollutants covered under national standards, and additionally regulates levels of VC, H<sub>2</sub>S, SO<sub>4</sub>, and visibility-reducing particulates. If an area does not meet CAAQS, CARB designates the area as a nonattainment area. For planning purposes, regions like the San Joaquin Valley Air Basin are given an air quality status designation by the federal and state regulatory agencies. The San Joaquin Valley Air Basin does not meet the CAAQS for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub> (SJVAPCD 2025a)

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<sup>7</sup> The SIP is a collection of regulations and documents used by the state and SJVAPCD to implement, maintain, and enforce the NAAQS, and to fulfill other requirements of the Clean Air Act.  
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CARB requires regions that do not meet CAAQS for ozone to submit clean air plans that describe plans to attain the standard or show progress towards attainment (SJVAPCD 2022).

In addition to the US EPA, CARB further regulates the amount of air pollutants that can be emitted by new motor vehicles sold in California. California’s motor vehicle emissions standards have always been more stringent than federal standards since they were first imposed in 1961. CARB has also developed Inspection and Maintenance (I/M) and "Smog Check" programs with the California Bureau of Automotive Repair. Inspection programs for trucks and buses have also been implemented. CARB also sets standards for motor vehicle fuels sold in California. The NAAQS and CAAQS are shown in Table 4.3-1.

**TABLE 4.3-1  
AMBIENT AIR QUALITY STANDARDS**

Pollutant	Averaging Time	California Standards Concentration	National Standards Concentration
Ozone	1-hour	0.09 ppm (180 µg/m <sup>3</sup> )	—
	8-hour	0.070 ppm (137 µg/m <sup>3</sup> )	0.070 ppm (137 µg/m <sup>3</sup> ) (3-year average of annual 4 <sup>th</sup> highest daily maxima)
Carbon Monoxide	8-hour	9.0 ppm (10,000 µg/m <sup>3</sup> )	9 ppm (10,000 µg/m <sup>3</sup> )
	1-hour	20 ppm (23,000 µg/m <sup>3</sup> )	35 ppm (40,000 µg/m <sup>3</sup> )
Nitrogen dioxide	Annual Average	0.030 ppm (57 µg/m <sup>3</sup> )	0.053 ppm (100 µg/m <sup>3</sup> )
	1-hour	0.18 ppm (339 µg/m <sup>3</sup> )	0.100 ppm (188 µg/m <sup>3</sup> ) (3-year average of annual 98 <sup>th</sup> percentile daily maxima)
Sulfur dioxide			
	24-hour	0.04 ppm (105 µg/m <sup>3</sup> )	—
	3-hour	—	0.5 ppm (1,300 µg/m <sup>3</sup> )
	1-hour	0.25 ppm (655 µg/m <sup>3</sup> )	0.075 ppm (196 µg/m <sup>3</sup> ) (3-year average of annual 99 <sup>th</sup> percentile daily maxima)
Respirable particulate matter (10 micron)	24-hour	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>
	Annual Arithmetic Mean	20 µg/m <sup>3</sup>	—
Fine particulate matter (2.5 micron)	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	12.0 µg/m <sup>3</sup> (3-year average)
	24-hour	—	35 µg/m <sup>3</sup> (3-year average of annual 98 <sup>th</sup> percentile daily concentrations)
Sulfates	24-hour	25 µg/m <sup>3</sup>	—
Lead	30-day	1.5 µg/m <sup>3</sup>	—
	3 Month Rolling Average	—	0.15 µg/m <sup>3</sup>

Source: CARB 2024.

SO<sub>2</sub> Federal 24 hour and annual standards are not applicable in the SJVAPCD.

µg/m<sup>3</sup> = micrograms per cubic meter

ppm = parts per million

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## **TACs**

California developed a program under the Tanner Toxics Act (Health and Safety Code sections 39650-39674, enacted as Assembly Bill [AB] 1807 in 1983) to identify, characterize and control TACs. Subsequently, AB 2728 (1987) incorporated all 188 HAPs into the AB 1807 process. The "Hot Spots information and Assessment Act," AB 2588, requires stationary sources to report the types and quantities of certain TACs routinely released into the air. SJVAPCD implements Air District, State and federal air toxics regulations, including the AB 2588 Air Toxics "Hot Spots" Program. SJVAPCD Regulation VII specifically addresses air toxics.

Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986), which became law in 1986, is a voter initiative law that prohibits the exposure of individuals to chemicals known to cause cancer or reproductive toxicity without emitters first giving clear and reasonable warning and prohibits discharge of these chemicals into drinking water. This law requires that the Governor revise and republish at least once per year the list of chemicals known to the State to cause cancer or reproductive toxicity within the meaning of the Act (Health and Safety Code section 25249.8). The list is published in Title 27, California Code of Regulations, section 27001.

## ***San Joaquin Valley***

The San Joaquin Valley Air Pollution Control District (SJVAPCD or Air District) is made up of eight counties in California's Central Valley: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and the San Joaquin Valley portion of Kern County. The primary role of the SJVAPCD is to develop plans and implement control measures in the San Joaquin Valley to control air pollution. Rules and regulations have been developed by SJVAPCD to control air pollution from a wide range of air pollution sources. In March 2006, SJVAPCD adopted an Indirect Source Review (ISR) rule (Rule 9510) that controls air pollution from new land development projects (SJVAPCD 2018). SJVAPCD also conducts public education and outreach efforts such as the Spare the Air, Wood Burning, and Smoking Vehicle voluntary programs.

## **Existing Air Quality**

The San Joaquin Valley experiences poor air quality conditions, due primarily to elevated levels of ozone and particulate matter. CARB, in cooperation with SJVAPCD, monitors air quality throughout the San Joaquin Valley Air Basin. Monitoring data presented in Table 4.3-2 was derived for each pollutant based upon the closest monitoring station to the project site.

## ***Ozone***

In California, ozone concentrations are generally lower near the coast than inland. The inland regions, such as the San Joaquin Valley, typically experience some of the higher ozone concentrations. This is because of the greater frequency of hot days and stagnant conditions that are conducive to ozone formation. Many areas of the San Joaquin Valley lie downwind of urban areas that are a source of ozone precursor pollutants. While Fresno County is fairly rural, exceedances of the ozone standard occurred on 31 to 41 days per year, based on the last three years of available monitoring data.

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**TABLE 4.3-2**  
**SUMMARY OF CRITERIA AIR POLLUTION MONITORING DATA FOR FRESNO COUNTY**

Pollutant	Standard	Monitored Values / & Exceedance Days		
		2021	2022	2023
Ozone (ppm)	State 1-Hour	0.125 / 12	0.112 / 4	0.117 / 4
Ozone (ppm)	State 8-Hour	0.100 / 41	0.089 / 31	0.088 / 35
Ozone (ppm)	Federal 8-Hour	0.100 / 39	0.089 / 30	0.088 / 30
PM <sub>10</sub> (ug/m <sup>3</sup> )	State 24-Hour	149.8 / 20	166.5 / 133	130.0 / 120
PM <sub>10</sub> (ug/m <sup>3</sup> )	Federal 24-Hour	151.8 / 0	73.4 / 0	131.1 / 0
PM <sub>10</sub> (ug/m <sup>3</sup> )	State Annual	NR	NR	NR
PM <sub>2.5</sub> (ug/m <sup>3</sup> )	Federal 24-Hour	104.6 / 39.7 <sup>(2)</sup>	55.8 / 21.5	51.3 / 11.0
PM <sub>2.5</sub> (ug/m <sup>3</sup> )	State Annual	15.7	14.8	12.6
PM <sub>2.5</sub> (ug/m <sup>3</sup> )	Federal Annual	17.2	14.8	12.6
Carbon Monoxide (ppm)	State/Fed.8-Hour	NR / -- <sup>(3)</sup>	NR / -- <sup>(3)</sup>	NR / -- <sup>(3)</sup>
Nitrogen Dioxide (ppm)	State 1-Hour	0.064 / 0	0.061 / 0	0.061 / 0
Nitrogen Dioxide (ppm)	Federal 1-Hour	0.065 / 0	0.062 / 0	0.062 / 0
Nitrogen Dioxide (ppm)	State Annual	0.018	0.019	0.010

Source: CARB 2024

### **Particulate Matter (PM<sub>2.5</sub> and PM<sub>10</sub>)**

Most areas of California have either 24-hour or annual PM<sub>10</sub> concentrations that exceed the CAAQS. Most urban areas exceed the state annual standard and the 24-hour federal standard. In the San Joaquin Valley, there is a strong seasonal variation in PM, with higher PM<sub>10</sub> and PM<sub>2.5</sub> concentrations occurring in the fall and winter months. These higher concentrations are caused by increased activity for some emission sources and meteorological conditions that are conducive to the build-up of particulate matter. Industry and motor vehicles consistently emit particulate matter. Seasonal sources of particulate matter in the San Joaquin Valley include wildfires, agricultural activities, windblown dust, and residential wood burning. In California, area sources, which primarily consist of fugitive dust, account for most directly emitted particulate matter. This includes dust from paved and unpaved roads. CARB estimates that 85 percent of directly emitted PM<sub>10</sub> and 66 percent of directly emitted PM<sub>2.5</sub> are from area sources. During the winter, the PM<sub>2.5</sub> size fraction makes up much of the total particulate matter concentrations. The major contributor to high levels of ambient PM<sub>2.5</sub> is the secondary formation of particulate matter caused by the reaction of NO<sub>x</sub> and ammonium to form ammonium nitrate. CARB estimates that the secondary portion of PM<sub>2.5</sub> makes up about 50 percent of the annual concentrations in the San Joaquin Valley. A review of San Joaquin Valley monitoring data shows high PM<sub>10</sub> and PM<sub>2.5</sub> levels during the fall<sup>8</sup>.

<sup>8</sup> CARB ADAM Data at <http://www.arb.ca.gov/adam/index.html>, Accessed 11/07/2024.  
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### **Carbon Monoxide**

State and federal standards for carbon monoxide are met throughout California by cleaner vehicles and fuels that were reformulated in the 1990s. Because CO levels are so low in the Air Basin, monitoring was discontinued after 2012.

### **Other Pollutants**

Air monitoring data indicate that the San Joaquin Valley meets ambient air quality standards for NO<sub>2</sub>, SO<sub>2</sub>, and lead. CARB does not routinely monitor Pb, sulphates, H<sub>2</sub>S and VC in the Air Basin.

### **Air Quality Trends**

Air quality in the San Joaquin Valley has improved significantly despite the natural low capacity for pollution created by unique geography, topography, and meteorology. Emissions have been reduced at a rate similar to or better than other areas in California. Since 1990, emissions of ozone precursors (i.e., NO<sub>x</sub> and ROG) have been reduced by 80 percent, resulting in fewer days where ozone standards have been exceeded. Direct emissions of PM<sub>10</sub> and PM<sub>2.5</sub> have also been substantially reduced. The San Joaquin Valley is the first Air Basin previously classified as “serious nonattainment” under the NAAQS to come into attainment of the PM<sub>10</sub> standards.

### **Attainment Status**

Areas that do not violate ambient air quality standards are considered to have attained the standard. Violations of ambient air quality standards are based on air pollutant monitoring data and are judged for each air pollutant. The San Joaquin Valley does not meet state or federal ambient air quality standards for ground level O<sub>3</sub> and PM<sub>2.5</sub>, or state standards for PM<sub>10</sub>. The attainment status for the San Joaquin Valley with respect to various pollutants of concern is shown in Table 4.3-3 on the next page.

Under the CAA, the US EPA has classified the region as *extreme nonattainment* for the 8-hour O<sub>3</sub> standard. The Air Basin has attained the NAAQS for PM<sub>10</sub>. The Air Basin is designated *nonattainment* for the PM<sub>2.5</sub> standard. CARB anticipates the San Joaquin Valley will also be designated nonattainment for the new 2024 PM<sub>2.5</sub> annual standard. The US EPA classifies the region as *attainment* or *unclassified* for all other air pollutants, which include CO and NO<sub>2</sub>.

At the state level, the Air Basin is considered *severe non-attainment* for ground level O<sub>3</sub> and *nonattainment* for PM<sub>10</sub> and PM<sub>2.5</sub>. In general, the CAAQS are more stringent than the NAAQS. The Air Basin is required to adopt plans on a triennial basis that show progress toward meeting the State O<sub>3</sub> standard. The Air Basin is considered *attainment* or *unclassified* for all other pollutants.

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**TABLE 4.3-3**  
**PLAN AREA ATTAINMENT STATUS**

Pollutant	Federal Status	State Status
Ozone (O <sub>3</sub> ) – 1-Hour Standard	No Federal Standard	Severe Nonattainment
Ozone (O <sub>3</sub> ) – 8-Hour Standard	Extreme Nonattainment	Nonattainment
Respirable Particulate Matter (PM <sub>10</sub> )	Attainment	Nonattainment
Fine Particulate Matter (PM <sub>2.5</sub> )	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Attainment	Attainment
Nitrogen Dioxide (NO <sub>2</sub> )	Attainment	Attainment
Sulfur Dioxide (SO <sub>2</sub> )	Attainment	Attainment
Sulfates and Lead	No Designation	Attainment
Hydrogen Sulfide	No Designation	Unclassified
Visibility Reducing Particles	No Designation	Unclassified

### Regional Air Quality Plans

In response to not meeting the NAAQS, the region is required to submit a SIP to US EPA through the state. The SIP is the compilation of regulations and plans used to implement and maintain the NAAQS for each nonattainment pollutants.

CARB submitted an Extreme Ozone Attainment Demonstration Plan to EPA in 2004, which addressed the old 1-hour NAAQS. US EPA approved the region’s 2007 Ozone Plan (Plan) in March 2012, which addressed the 1997 8-hour ozone NAAQS. A wide variety of control measures are included in these plans, such as reducing or offsetting emissions from construction and traffic associated with land use developments. In June 2016, the SJVAPCD adopted a plan addressing the 2008 8-Hour Ozone Standard, later approved by US EPA in 2019. In December 2022, the SJVAPCD adopted a plan which addressed the 2015 8-Hour Ozone Standard (SJVAPCD 2022). This Plan satisfies the requirements of the CAA in addition to ensuring expeditious attainment of the 0.70 ppm 8-hour ozone standard.

The SJVAPCD adopted the *2024 Plan for the 2012 PM<sub>2.5</sub> Standards* in June 2024. This plan was approved by CARB in July 2024 and fulfills the remaining CAA requirements, including the final modeling analysis, attainment strategy and emission reduction commitments, reasonable further progress/quantitative milestones, and contingency measures. This Plan demonstrates expeditious attainment of the 2012 PM<sub>2.5</sub> standard by 2030.

Both the ozone and PM<sub>2.5</sub> plans include measures (i.e., federal, state and local) that would be implemented through state and Air District rulemaking or program funding to reduce air pollutant emissions. Transportation Control Measures (TCMs) are part of the SIP. These are strategies that reduce transportation-related air pollution, GHG emissions, and fuel use by reducing vehicle miles traveled and improving roadway operations. The plans described above that address ozone NAAQS also meet the state planning requirements.

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## **SJVAPCD Rules and Regulations**

The SJVAPCD has adopted rules and regulations that apply to land use projects, such as the potential VCIP solar projects. These are described below.

### ***Indirect Source Review (ISR) Rule***

In 2005, the SJVAPCD adopted the ISR (SJVAPCD Rule 9510) to reduce ozone precursors (i.e., ROG and NO<sub>x</sub>) and PM<sub>10</sub> emissions from new land use development projects (SJVAPCD 2018). The rule resulted from the adoption of SJVAPCD commitments in the 2004 Extreme Ozone Attainment Demonstration Plan and the 2006 PM<sub>10</sub> Plan. These plans identified the need to reduce PM<sub>10</sub> and NO<sub>x</sub> substantially to attain and maintain the NAAQS on schedule.

New discretionary development projects with a certain amount of proposed square footage or residential units upon full buildout are subject to the ISR Rule. It is understood that any VCIP projects that propose to develop 9,000 square feet would be subject to the ISR Rule (Rule 9510, section 2.1.10). The ISR Rule requires projects to mitigate both construction and operational period emissions by applying the SJVAPCD-approved mitigation measures and paying fees to support programs that reduce emissions. The ISR Rule requires mitigated exhaust emissions during construction based on the following levels:

- 20 percent reduction from unmitigated baseline in total NO<sub>x</sub> exhaust emissions
- 45 percent reduction from unmitigated baseline in total PM<sub>10</sub> exhaust emissions

For operational emissions, Rule 9510 requires the following reductions:

- 33.3 percent of the total operational NO<sub>x</sub> emissions from unmitigated baseline
- 50 percent of the total operational PM<sub>10</sub> exhaust emissions from unmitigated baseline

Fees apply to the unmitigated portion of the emissions and are based on estimated costs to reduce the emissions from other sources plus estimated costs to cover administration of the program. It is expected that in accordance with the ISR Rule, each potential VCIP project would be required to apply for approval of an Air Impact Assessment (AIA) to the SJVAPCD. The AIA would provide the calculation of project emissions to determine the amount of fees payable for unmitigated emissions.

### ***Regulation VIII – Fugitive PM<sub>10</sub>***

SJVAPCD controls fugitive PM<sub>10</sub> through Regulation VIII (Fugitive PM<sub>10</sub> Prohibitions). The purpose of this regulation is to reduce ambient concentrations of PM<sub>10</sub> by requiring actions to prevent, reduce or mitigate anthropogenic (human caused) fugitive dust emissions. This applies to activities such as construction, bulk materials, open areas, paved and unpaved roads, material transport, and agricultural areas. Sources regulated are required to provide dust control plans for SJVAPCD approval that meet the regulation requirements. Fees are collected by SJVAPCD to cover costs for reviewing plans and conducting field inspections.

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**Other SJVAPCD Rules**

The potential VCIP projects may be subject to other SJVAPCD rules, including but not limited to the following:

- **Rule 4101** (Visible Emissions): The purpose of this rule is to prohibit the emissions of visible air contaminants to the atmosphere. The provisions of this rule apply to operations that emit or may emit air contaminants.
- **Rule 4102** (Nuisance): The purpose of this rule is to protect the health and safety of the public, and applies to operations that emits or may emit air contaminants or other materials.
- **Rule 4601** (Architectural Coatings): The purpose of this rule is to limit Volatile Organic Compounds (VOC) emissions from architectural coatings. Emissions are reduced by limits on VOC content and providing requirements on coatings storage, cleanup, and labeling.
- **Rule 4641** (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations): The purpose of this rule is to limit VOC emissions from asphalt paving and maintenance operations.

(SJVAPCD 2025b)

**Fresno County****Fresno County General Plan**

The Fresno County General Plan (Fresno County 2024b) includes the following goals and policies related to air quality that may be relevant to the VCIP.

**Open Space and Conservation Element****G. Air Quality**

Goal OS-G To improve air quality and minimize the adverse effects of air pollution in Fresno County.

Policy OS-G.2 **Air Quality Impact Assessment**

The County shall ensure that air quality impacts identified during the CEQA review process are fairly and consistently mitigated. The County shall require projects to comply with the County's adopted air quality impact assessment and mitigation procedures.

Policy OS-G.11 **Sensitive Receptors**

The County shall continue, through its land use planning processes, to avoid inappropriate location of residential uses and sensitive receptors in relation to uses that include, but are not limited to, industrial and manufacturing uses and any other uses which have the potential for creating a hazardous or nuisance effect.

Policy OS-G.14 **Fugitive Dust Control Measures**

The County shall include fugitive dust control measures as a requirement for subdivision maps, site plans, and grading permits. This will assist in implementing the SJVAPCD's particulate matter of less than ten (10) microns (PM<sub>10</sub>) regulation (Regulation VIII). Enforcement actions can be coordinated with the Air District's Compliance Division.

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**Policy OS-G.15      Access Road Standards**

The County shall require all access roads, driveways, and parking areas serving new commercial and industrial development to be constructed with materials that minimize particulate emissions and are appropriate to the scale and intensity of use.

**Sensitive Receptors**

“Sensitive receptors” are defined as facilities where sensitive population groups, such as children, the elderly, the acutely ill, and the chronically ill, are likely to be located. These land uses include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and medical clinics. There are numerous rural dwellings and two elementary schools within the Plan Area. The community of Cantua Creek, near the center of the Plan Area, includes approximately 100 residences and the Cantua Elementary School, and represents the greatest concentration of sensitive receptors within the Plan Area.

**4.3.3. Environmental Impact Analysis****METHODOLOGY**

This section analyzes the potential for implementation of the VCIP to result in significant environmental impacts related to air quality based on the air quality evaluation prepared for this PEIR by Illingworth & Rodkin (see Appendix B of this PEIR). The latest version of the California Emissions Estimator Model (CalEEMod) was used to identify and quantify criteria pollutant emissions from construction and operational sources. The results were compared to the significance thresholds established by SJVAPCD to determine the significance of potential impacts and to identify mitigation measures as appropriate. In addition, a Health Risk Assessment (HRA) was undertaken to determine the significance of potential health risks associated with VCIP implementation.

**SIGNIFICANCE CRITERIA**

Based on Appendix G of the state CEQA Guidelines, implementation of VCIP would be considered to result in a significant air quality impact if it would:

- a. Conflict with or obstruct implementation of the applicable air quality plan.
- b. 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.
- c. Expose sensitive receptors to substantial pollutant concentrations.
- d. Result in other emissions (such as those leading to odors) affecting a substantial number of people.

SJVAPCD has developed the Guide for Assessing and Mitigating Air Quality Impacts (SJVAPCD 2015c), also known as the GAMAQI. Chapter 8 of the GAMAQI (Assessing Air Quality Impacts) sets forth the following thresholds of significance to determine whether a proposed project would result in a significant air quality impact under CEQA:

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- 1) Construction Emissions of PM. Construction projects are required to comply with SJVAPCD's Regulation VIII. However, the size of the project and the proximity to sensitive receptors may warrant additional measures, such as additional watering, wind fences, reduced equipment usage, etc.
- 2) Criteria Air Pollutant Emissions. SJVAPCD's adopted CEQA thresholds of significance for criteria pollutant emissions and their application are presented in Table 4.3-4 below<sup>9</sup>. These thresholds address both construction and operational emissions. Note that SJVAPCD treats permitted equipment and activities separately, as discussed under "Other SJVAPCD Rules" above. The potential VCIP projects would not be considered a source of sulfur dioxide (SO<sub>x</sub>) emissions and would have relatively low CO emissions.
- 3) Ambient Air Quality. Emissions that are predicted to cause or contribute to a violation of an ambient air quality standard would be considered a significant impact. SJVAPCD recommends that dispersion modeling be conducted for construction or operation when on-site emissions exceed 100 pounds per day after implementation of all mitigation measures.
- 4) Local CO Concentrations. CO is considered a localized air pollutant caused by large emissions in a localized area, such as busy roadway intersections. Construction equipment is not considered a substantial source of CO emissions; however, construction-related traffic would be considered a source of CO. Traffic emissions associated with the VCIP projects would be considered significant if the project contributes to CO concentrations at receptor locations in excess of an ambient air quality standard.
- 5) Toxic Air Contaminants or Hazardous Air Pollutants. Exposure to HAPs or TACs would be considered significant if the probability of contracting cancer for the Maximally Exposed Individual (MEI) would exceed 20 in 1 million or would result in a Hazard Index (HI) greater than 1 for non-cancer health effects.<sup>10</sup> The HI represents the ratio of the predicted exposure to a recommended exposure limit, where an HI of greater than 1.0 indicates an unhealthy exposure.
- 6) Odors. Odor impacts associated with the potential VCIP projects would be considered significant if they have the potential to frequently expose members of the public to objectionable odors through development of a new odor source or placement of receptors near an existing odor source.
- 7) Cumulative Impacts: With respect to cumulative air quality impacts, the GAMAQI provides that any single project that would individually have a significant air quality impact (i.e., exceed significance thresholds for ROG, NO<sub>x</sub>, or PM<sub>10</sub>) would also be considered to have a significant cumulative impact (SJVAPCD 2015c, p. 66). In cases where project emissions are all below the applicable significance thresholds, a project may still contribute to a significant cumulative impact if there are other projects nearby whose emissions would combine with a given project's emissions to result in an exceedance of one or more significance thresholds for criteria pollutants (SJVAPCD 2015c, p. 108).

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<sup>9</sup> SJVAPCD significance thresholds for criteria air pollutant emissions are published on their website at <https://ww2.valleyair.org/media/m2ecyiw/1-cms-format-ceqa-air-quality-thresholds-of-significance-criteria-pollutants.pdf>, accessed March 31, 2025. These are equivalent to those published in the GAMAQI (SJVAPCD 2015c).

<sup>10</sup> SJVAPCD significance thresholds for toxic air contaminants are published on their website at <https://ww2.valleyair.org/media/2lpbkso0/2-cms-format-air-quality-thresholds-of-significance-toxic-air-contaminants.pdf>, accessed on March 31, 2025.

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**TABLE 1.3-4**  
**SJVAPCD CEQA THRESHOLDS OF SIGNIFICANCE FOR PROJECTS**  
**[CRITERIA POLLUTANT EMISSION LEVELS IN TONS PER YEAR]**

Pollutant/Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
Carbon Monoxide (CO)	100	100	100
Nitrogen Oxides (NO <sub>x</sub> )	10	10	10
Reactive Organic Gases	10	10	10
Sulfur Dioxide (SO <sub>x</sub> )	27	27	27
Particulate Matter – PM <sub>10</sub>	15	15	15
Particulate Matter – PM <sub>2.5</sub>	15	15	15

Source: SJVAPCD 2015a

### 4.3.3.1. DIRECT AND INDIRECT EFFECTS

#### Impact AQ-1. Conflict with Air Quality Plan

**Implementation of the VCIP Energy Resource and Infrastructure Plans would not conflict with or obstruct implementation of an applicable air quality plan. (*Less-than-Significant Impact*)**

SJVAPCD’s guidance document for assessing and mitigating air quality impacts (GAMAQI) does not include methodologies for assessing the effect of a project on consistency with clean air plans developed by the SJVAPCD. However, regional clean air plans developed by SJVAPCD rely on local land use designations to develop population and travel projections that are the basis of future emissions inventories. Air pollution control plans are aimed at reducing these projected future emissions. Upon their completion, the energy resource and infrastructure projects planned under the VCIP would result in no new population growth and very minor employment growth. Thus, VCIP implementation would not alter long term population and vehicle related emissions projections contained in regional clean air planning efforts in any measurable way, and would not conflict with the control plans aimed at reducing these projected emissions. Therefore, implementation of the proposed VCIP would not conflict with or obstruct implementation of efforts outlined in the region’s air pollution control plans to attain or maintain ambient air quality standards, and the potential impact would be *less than significant*.

As discussed in Section 4.3.2. *Regulatory Context*, in 2005 the SJVAPCD adopted the ISR Rule 9510 to fulfill its emission reduction commitments in its PM<sub>10</sub> and Ozone attainment plans. SJVAPCD determined that implementation and compliance with the ISR Rule would reduce the cumulative PM<sub>10</sub> and NO<sub>x</sub> impacts of growth anticipated in the air quality plans to a less-than-significant level. As discussed under Impact AQ-2 below, the {AM0011.1}

project proponent for each potential VCIP project will be required to file an application for ISR Review to confirm that the project will be consistent with emissions reduction requirements. The final emissions calculations for a project under the VCIP would be performed in an AIA, as required under the ISR Rule to determine whether and to what extent specific pollutant reductions would be required for the project through on-site and/or off-site measures. Upon implementation of ISR Rule emission reduction measures, each VCIP project would fulfill its share of achieving SJVAPCD's emission reduction commitments in the PM<sub>10</sub> and Ozone attainment plans. Therefore, the implementation of the VCIP Energy Resource and Infrastructure Plans would not conflict with or obstruct implementation of the applicable air quality plans and the potential impact would be *less than significant*.

**Mitigation Measures: No mitigation is required.**

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### **Impact AQ-2. Cumulatively Considerable Net Increase in Any Criteria Pollutant**

**Implementation of the VCIP Energy Resource and Infrastructure Plans would increase emissions of criteria pollutants; however, any increases would be reduced to below the applicable SJVAPCD criteria pollutant offset thresholds by mitigation measures and would not be cumulatively considerable. (*Less-than-Significant Impact with Mitigation*)**

SJVAPCD has developed criteria to determine if a development project could result in potentially significant regional emissions. According to Section 7.14 of the GAMAQI ("Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant?"), any proposed project that would individually have a significant air quality impact (i.e., exceed significance thresholds for ROG or NO<sub>x</sub>) would also be considered to have a significant cumulative air quality impact. The GAMAQI further states that "a Lead Agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program, including, but not limited to an air quality attainment or maintenance plan that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located" (SJVAPCD 2015c, p. 66). SJVAPCD's attainment plans demonstrate that project specific emissions below SJVAPCD's Rule 2201 (New Source Review or NSR) offset thresholds for criteria pollutants will have a less than significant impact on air quality. Thus, SJVAPCD has determined that the use of its offset thresholds as thresholds of significance for criteria pollutants under CEQA Guidelines section 15064.7 is an appropriate and effective means of promoting consistency in significance determinations regarding stationary and non-stationary emissions sources (SJVAPCD 2015c, pp. 81-82). For local impacts of PM<sub>10</sub> from unrelated construction projects, the GAMAQI recommends a qualitative approach where construction activities from unrelated projects in the area should be examined to determine if enhanced dust suppression measures are necessary.

The proposed VCIP is a comprehensive master plan of development for solar PV generation projects and battery storage facilities, along with their supporting infrastructure of gen-tie lines, collection substations, and connecting transmission lines. The VCIP and this PEIR provide a plan for overall development at a conceptual land use scale but do not identify individual projects or provide project-level details of development, as this project-level information is not available and cannot be accurately forecasted. SJVAPCD's significance thresholds as identified in the GAMAQI would apply to each individual project proposed to be constructed under the VCIP. These {AM0011.1}

thresholds are not intended to be applied at the VCIP-wide level; they apply only to development projects on a case-by-case basis, depending on project size. All emissions of criteria pollutants would occur at the project level. However, to determine the overall air quality impacts from construction and operations resulting from the full buildout of the VCIP, estimates of overall emissions were computed.

Project-related air quality impacts fall into two categories: short-term impacts due to construction, and long-term impacts due to project operation. During construction, the potential VCIP projects would affect local particulate concentrations primarily due to fugitive dust sources and would contribute to ozone and PM<sub>10</sub>/PM<sub>2.5</sub> levels from exhaust emissions. Over the long term, the projects would result in an increase in emissions of ozone precursors ROG and NO<sub>x</sub>, primarily due to increased motor vehicle trips (employee trips, truck deliveries, and on-site maintenance activities). The construction and operational emissions associated with the VCIP projects are discussed below.

### **VCIP Project Construction**

VCIP implementation would consist of various types of projects, described above, constructed as discrete projects in various sizes. A CalEEMod model was developed to represent emissions from the VCIP projects planned to be developed in each year of VCIP buildout. The emissions computed using CalEEMod address the use of construction equipment (including helicopters), worker vehicle travel, on-site vehicle and truck use, and off-site truck travel by vendors and equipment/material deliveries. All commuting workers were conservatively assumed to be driving solo, whereas experience shows that utility-scale solar projects typically have a carpooling rate of 25-30 percent. In addition, substantial reductions in commuter traffic would occur through implementation of traffic mitigation measures such as the fleet of shuttle buses required to avoid congestion on area roadways (see Section 4.16. *Transportation*, Mitigation Measure TRA-1).

Annual construction emissions from buildout of the VCIP were based on the proposed construction schedule beginning in 2028/2029 (initial infrastructure improvements in 2028, with solar PV projects starting in 2029) and continuing through 2038.

### ***Construction Dust***

Construction activities would generate particulate dust and other pollutants, which would temporarily affect local air quality in the surrounding area. Grading and site disturbance (e.g., vehicle travel on exposed areas) would likely result in the greatest emissions of dust and PM<sub>10</sub>/PM<sub>2.5</sub>. Windy conditions during construction could cause substantial emissions of PM<sub>10</sub>/PM<sub>2.5</sub>.

To control dust emissions, the SJVAPCD emphasizes implementation of effective and comprehensive control measures. Regulation VIII essentially prohibits emission of visible dust (limited to 20-percent opacity) and requires that disturbed areas or soils be stabilized. Prior to construction, each project proponent would be required to submit a Dust Control Plan that meets Regulation VIII's requirements. As specified in Regulation VIII, Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities), a Dust Control Plan is subject to review and approval by SJVAPCD before any ground disturbing activity can begin. Regulation VIII and its constituent rules pertaining to construction activities generally require the following dust control measures:

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- Effective dust suppression (e.g., watering) for land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill and demolition activities.
- Effective stabilization of all disturbed areas of a construction site, including storage piles, not used for seven or more days.
- Control of fugitive dust from on-site unpaved roads and off-site unpaved access roads.
- Removal of accumulations of mud or dirt at the end of the workday or once every 24 hours from public paved roads, shoulders and access ways adjacent to the site.
- Cease outdoor construction activities that disturb soils during periods with high winds.
- Record keeping for each day dust control measures are implemented.
- Limit traffic speeds on unpaved roads to 15 mph.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Landscape or replant vegetation in disturbed areas as quickly as possible.
- Prevent the tracking of dirt on public roadways. Limit access to the construction sites, so tracking of mud or dirt on public roadways can be prevented. If necessary, use wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site.
- Suspend grading activity when winds (instantaneous gusts) exceed 25 mph or dust clouds cannot be prevented from extending beyond the site.

Implementation of an approved Dust Control Plan would reduce emissions by at least 80 percent with aggressive measures<sup>11</sup>. Anyone who prepares or implements a Dust Control Plan must attend a training course conducted by the Air District (preparer is usually someone associated with the construction contractor who will implement the dust control measures). Construction sites are subject to SJVAPCD inspections under this Regulation VIII. Compliance with Regulation VIII, including the effective implementation of a Dust Control Plan that has been reviewed and approved by SJVAPCD, would reduce dust and PM<sub>10</sub> emissions to *less-than-significant* levels.

### **Construction Exhaust Emissions**

Equipment and vehicle trips associated with construction would emit ozone precursor air pollutants on a temporary basis. Construction equipment would also emit DPM, which is a TAC, that can adversely affect local air quality. (See Impact AQ-3 below for a discussion of potential TAC impacts.)

Emissions of air pollutants that could affect regional air quality were addressed by modeling emissions and comparing them to the SJVAPCD significance thresholds. Construction period air pollutant emissions were estimated using the CalEEMod model. Emissions from all phases of construction are shown in Tables 4.3-5 below. The emissions calculations reflect unmitigated conditions, except for the dust component of PM<sub>10</sub> and PM<sub>2.5</sub>, which are assumed in the calculations to be mitigated by dust control measures required under SJVAPCD Regulation VIII.

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<sup>11</sup> Based on modeling of dust control measures using CalEEMod for a combination of control measures that include aggressive site watering, reduced vehicle speed, and use of dust palliatives.  
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**TABLE 4.3-5**

**TOTAL ANNUAL VCIP CONSTRUCTION CRITERIA AIR POLLUTANT EMISSIONS IN TONS PER YEAR**

Construction Year	ROG	NO <sub>x</sub> <sup>*</sup>	CO	Total PM <sub>10</sub> <sup>**,**</sup>	Total PM <sub>2.5</sub> <sup>**</sup>
2029	27.44	200.33	387.61	138.60	19.30
2030	24.39	193.71	374.71	137.93	18.60
2031	23.50	189.21	363.89	137.90	18.57
2032	22.55	181.98	353.09	137.89	18.32
2033	21.42	175.67	337.19	134.61	17.84
2034	18.74	156.66	300.67	121.00	16.07
2035	18.18	151.29	293.72	120.99	16.07
2036	17.80	147.84	287.16	120.77	16.06
2037	15.83	145.62	283.10	120.76	16.06
2038	8.16	74.84	146.15	61.17	8.19
<b>Individual Project-Level Significance thresholds</b>	<b>10</b>	<b>10</b>	<b>100</b>	<b>15</b>	<b>15</b>

\* ISR requires reductions for NO<sub>x</sub> and PM<sub>10</sub> that are not reflected in this assessment.

\*\* Values reported for “PM<sub>10</sub> and PM<sub>2.5</sub> include a combination of exhaust and fugitive dust, and reflect the effect of dust control measures implemented under Regulation VIII, but not reductions in exhaust emissions required under ISR.

Construction emissions were estimated based on the proposed construction schedules, and anticipated construction vehicle and equipment use for all VCIP projects including solar and energy storage facilities, substations, gen-tie lines and connecting transmission lines. The emissions estimated using CalEEMod address use of construction equipment, worker vehicle travel, on-site vehicle and truck use, off-site truck travel by vendors and equipment/material deliveries. Also included are the emissions from the use of a helicopter for installation of the gen-tie lines and transmission lines. Criteria air pollutant exhaust and fugitive dust (i.e., PM<sub>10</sub> and PM<sub>2.5</sub>) were estimated using CalEEMod. (Note that the unmitigated CalEEMod modeling does not include the effects of SJVAPCD Regulation VIII that would substantially reduce fugitive PM<sub>10</sub> and PM<sub>2.5</sub> emissions.) The air quality calculations are included as attachments to the Air Quality Assessment, which is contained in Appendix B of this PEIR.

As shown in Table 4.3-5, unmitigated construction emissions from the VCIP projects would exceed applicable Air District thresholds for all criteria pollutants during each year of construction. The table conservatively assumes that all commuting workers would be driving solo, whereas experience shows that utility-scale solar projects

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typically have a carpooling rate of 25-30 percent. In addition, substantial reductions in commuter traffic would occur through implementation of traffic mitigation measures such as the fleet of shuttle buses required to avoid congestion on area roadways (see Section 4.16. *Transportation*).

Emissions reported in Table 4.3-5 reflect those associated with buildout of the entire VCIP, which would involve numerous construction projects over a period of approximately 10 years. Thus, it would not be appropriate to apply the Air District's project-level CEQA thresholds to the annual unmitigated emissions provided in Table 4.3-5, since the thresholds only apply to individual projects and not to a series of projects constructed in a given year.<sup>12</sup> Individual VCIP projects could exceed the SJVAPCD CEQA significance thresholds for construction air quality impacts; however, application of dust emissions controls, as required by SJVAPCD, would be expected to reduce fugitive PM<sub>10</sub> emissions below the significance thresholds.

Experience shows that solar and battery energy storage system (BESS) projects of up to 300 MW that are constructed in one year result in emissions below the thresholds for all criteria pollutants with implementation of dust controls required under Regulation VIII (Kings County 2024, Fresno County 2024f). Thresholds for criteria pollutants could be exceeded at larger individual VCIP projects constructed in one year, although it is anticipated that the VCIP would include few if any projects larger than 300 MW constructed in one year. As provided in Section 2. *Project Description*, it is anticipated that the typical solar and BESS project would have a generating and storage capacity of 250 MW and occupy about 1,600 acres.

For any larger projects, additional reductions in emissions would be achieved through application of the SJVAPCD ISR Rule (Rule 9510), which applies to construction of projects with mitigated emissions above 2.0 tons per year (tpy) of NO<sub>x</sub> or 2.0 tpy of PM<sub>10</sub>. Regardless of whether a project's construction emissions of regional pollutants would exceed the Air District's CEQA significance thresholds for each pollutant, the project is still required to comply with Rule 9510 to ensure that the project contributes its fair share of emissions reductions to achieve the basin-wide reduction targets established in the Air District's Ozone and PM attainment plans. Rule 9510 requires that the project reduce uncontrolled construction exhaust emissions by 20 percent for NO<sub>x</sub> and 45 percent for PM<sub>10</sub> from calculated unmitigated levels. The basis for the reductions is determined using the CalEEMod model. SJVAPCD encourages reductions through on-site mitigation measures. (Note: The use of the term "mitigation" under Rule 9510 does not refer to mitigation of impacts under CEQA; i.e., the ISR emission reduction percentages are required without regard to whether the CEQA emissions thresholds are exceeded or not.) Fees to purchase or sponsor off-site reductions through SJVAPCD apply when on-site mitigation measures do not achieve the required percentage of emissions reduction. Using less-polluting construction equipment, such as newer equipment or retrofitting older equipment reduces construction emissions on-site. A combination of on-site and off-site measures can be implemented to meet the overall emission reduction requirements. The uncontrolled emissions reported in Table 4.3-5 do not include the reductions required by Rule 9510.

Note that meeting the requirements of Rule 9510 does not necessarily mean that emissions would be reduced below the CEQA significance thresholds. In such cases, the project proponent and SJVAPCD would enter into a contractual agreement (i.e., Voluntary Emissions Reduction Agreement - VERA), under which the project proponent agrees to mitigate project-specific emissions (to below the Air District's thresholds) by providing funds to the

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<sup>12</sup> While SJVAPCD's significance thresholds only apply to individual projects, they are a major component of SJVAPCD's attainment strategy as it relates to growth within the and are designed to ensure that numerous development projects do not result in cumulatively considerable impacts regarding nonattainment pollutants and their precursors (SJVAPCD 2015c, p. 81.)

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SJVAPCD. SJVAPCD administers the implementation of the VERA by identifying emissions reductions projects, funding those projects and verifying that emissions reductions have been successfully achieved. Types of emission reduction projects that have been funded in the past include using electric stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacing agricultural equipment with the latest generation technologies. The execution and implementation of VERAs can and, as necessary, would feasibly mitigate project-specific air quality impacts to less-than-significant levels under CEQA. VERAs are nominally voluntary. However, to meet CEQA's requirement to mitigate impacts to the extent feasible, in practice they must be executed and implemented when design elements, ISR Rule mitigation measures, and compliance with other SJVAPCD rules and regulations are not sufficient to reduce project-related impacts on air quality to a less-than-significant level (CEQA Guidelines Section 15126.4(a)).

The VCIP solar and BESS projects would be decommissioned at the end of their productive lives. The activities associated with deconstruction would be comparable to construction, but emissions are expected to be substantially lower given phasing of anticipated reductions in vehicle and equipment emissions pursuant to state and federal regulations, and also because of the generally lower intensity of equipment use associated with decommissioning. Thus, emissions during decommissioning are not expected to exceed SJVAPCD's significance thresholds for any criteria pollutants. With application of the Air District's dust control requirements, fugitive PM<sub>10</sub> emissions are likewise expected to be below the CEQA significance thresholds during decommissioning of potential VCIP projects.

#### **Mitigation Measure AQ-1: Construction and Decommissioning Period Emissions Controls**

**To reduce potential emissions of criteria pollutants and their precursors for which the Plan Area is non-attainment during construction and decommissioning of individual VCIP projects, apply on- and off-site emissions reduction measures as required by the SJVAPCD.**

Individual projects are subject to the ISR Rule, which would require reductions in emissions of NO<sub>x</sub> and PM<sub>10</sub>. Note that reductions in PM<sub>10</sub> would also reduce PM<sub>2.5</sub> emissions. Measures to reduce on-site emissions may include the use of Tier 4 construction equipment that would reduce the on-site project emissions of NO<sub>x</sub> by 32 percent during the early VCIP construction years and by 26 percent in later years when NO<sub>x</sub> emissions are lower due to required emission control improvements in the construction vehicle fleet. Off-site vehicle travel also contributes to NO<sub>x</sub> and particulate matter emissions during construction. Approximately 25 percent of commuting construction workers are expected to carpool based on experience at previous solar projects. Also, VCIP implementation will require substantial traffic mitigation, primarily in the form of a fleet of shuttle buses that would substantially reduce emissions from worker travel.

In summary, while the residual construction- and decommissioning-related emissions of ozone precursors and particulates (i.e., emissions below the CEQA thresholds after mitigation) may result in an insubstantial increase in criteria air pollutants, and therefore would have an insubstantial health effect (as described in Section 4.3.2. *Regulatory Context* under "Criteria Air Pollutants and Their Health Effects"), the overall impacts would not cause the health-based NAAQS or CAAQS to be violated. Therefore, the air quality impacts resulting from construction and decommissioning of VCIP projects, individually and collectively, would be reduced to *less-than-significant* with the implementation of MM AQ-1.

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**VCIP Project Operations**

Operational emissions from proposed VCIP projects would be generated primarily by traffic and maintenance equipment, which would result in emissions of criteria pollutants. Table 4.3-6, below, shows the incremental operational emissions from VCIP projects for all 10 years of buildout, plus emissions for 2039 which would be the first full year of operations for all VCIP projects. Operational emissions would consist of emissions from maintenance vehicles, off-road equipment usage, and worker and vendor vehicles.

**TABLE 4.3-6  
ANNUAL VCIP OPERATIONAL EMISSIONS IN TONS PER YEAR (UNMITIGATED)**

Operation Year	Cumulative Generation (MW)	ROG	NO <sub>x</sub>	CO	PM <sub>10</sub> <sup>*</sup>	PM <sub>2.5</sub> <sup>*</sup>
2030	2,300	0.30	2.32	3.95	12.95	1.40
2031	4,600	0.59	4.56	7.79	25.90	2.80
2032	6,900	0.86	6.75	11.56	38.84	4.20
2033	9,200	1.14	8.88	15.27	51.77	5.59
2034	11,500	1.40	10.98	18.92	64.71	6.98
2035	13,600	1.64	12.87	22.21	76.51	8.24
2036	15,700	1.87	14.71	25.47	88.31	9.50
2037	17,800	2.10	16.54	28.71	100.10	10.76
2038	19,900	2.33	18.34	31.94	111.90	12.02
2039	21,000	2.43	19.21	33.56	118.08	12.68
<i>Individual Project Significance Thresholds</i>		<i>10</i>	<i>10</i>	<i>100<sup>2</sup></i>	<i>15</i>	<i>15</i>

\*Includes both exhaust and fugitive dust emissions.

As shown in Table 4.3-6, the Air District’s thresholds for NO<sub>x</sub> and PM<sub>10</sub> would be exceeded if the entire VCIP were a single project. However, to determine the significance of air quality impacts, the Air District would not consider the emissions from the entire development planned under the VCIP, but would apply the thresholds to the emissions of individual projects on an annual basis. As provided above, the Air District’s thresholds are designed to achieve its attainment strategy as it relates to the substantial growth projected within the Air District and fundamentally consider the cumulative effects of multiple projects. The largest potential solar project within the

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VCIP (i.e., 1,150 MW based on transmission capacity) would be quite small compared to the total VCIP, i.e., would represent less than 5 percent of the total VCIP generation capacity, and would emit a proportional amount of criteria pollutants. Therefore, the annual operational emissions from an individual solar project in 2039 would be below the operational thresholds for each pollutant. Criteria pollutant emissions from individual VCIP projects would be below their applicable thresholds. Therefore, the operational air quality impacts from VCIP development would be *less than significant*.

Note that on-site travel and activity were assumed to occur on unpaved roadways. It is important for solar projects to minimize generation of dust that could settle on PV equipment and adversely affect the overall performance of solar modules. The potential VCIP solar and energy storage projects would have internal gravel roadways and compacted earth roadways that would be compacted to 95 percent compaction and treated with dust palliatives to minimize dust generation. Reduced traffic speeds would further reduce dust emissions.

Proposed VCIP projects would be subject to SJVAPCD's ISR Rule 9510 to reduce NO<sub>x</sub> and PM<sub>10</sub> emissions. The emissions in Table 4.3-6 do not reflect any reductions that would be required under ISR.

Stationary combustion equipment, like standby generators, which could emit air pollution during facility operation, are not anticipated to be utilized for VCIP projects. Photovoltaic energy projects do not typically include standby generators but rely on standby batteries for temporary power supply in the event of power outage on the local electricity distribution system. Any standby emergency generator (rated 50 horsepower or greater) would require a permit from SJVAPCD, but their use in VCIP projects is not foreseen. Sources of stationary air pollutant emissions that comply with all applicable SJVAPCD regulations generally are not considered to have a significant air quality impact for CEQA purposes.

In summary, the emissions of criteria pollutants from operation of VCIP projects, individually and collectively, would result in a *less-than-significant impact* to air quality.

**Mitigation Measures: No mitigation is required.**

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### ***Comparison of VCIP Emissions with Emissions from Existing Agricultural Activities***

The following comparison of VCIP emissions with emissions from existing agricultural activities is provided for informational purposes and is not part of the CEQA analysis of air quality impacts.

The VCIP would essentially utilize land that is currently active for agricultural purposes. Farming operations generate existing emissions of dust and combustion-generated air pollutants. Dust emissions are generated primarily by ground disturbances from tilling, harvesting, and vehicle travel over unpaved surfaces. ROG emissions are primarily from the application of fertilizers and pesticides. NO<sub>x</sub> emissions are primarily from the operation of farm equipment that include tractors and harvesters. There are emissions from truck traffic used to export farm products and service the farmlands, as well as the workforce traffic.

VCIP implementation would develop energy and infrastructure projects on about 136,000 acres in Fresno County. In 2024 approximately 53,044 acres of this total were actively farmed for row and field crops, tree crops, and vines, and approximately 81,357 acres were fallowed (the remaining 1,599 acres are mapped as natural or {AM0011.1})

developed/roads)(see Section 4.4. *Biological Resources*, Table 4.4-1). Agricultural activities such as discing and weed control occur on fallowed lands. Thus, there are agriculturally related emissions associated with both actively farmed and fallowed lands, although a wider range of activities that result in emissions occurs on actively farmed lands (e.g., harvesting, irrigation, pest control). Altogether, these agriculturally related activities result in emissions of particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) from tilling, discing, and other soil preparation; pruning; harvesting; vehicle travel on unpaved farm roads; and wind erosion. They also result in NO<sub>x</sub> and VOC emissions associated with the use of diesel fuel in tractors, sprayers, and irrigation pumps, as well as the use of pesticides and herbicides. Approximate agricultural emissions associated with these existing uses were calculated for informational purposes.

#### CARB Inventory Estimates

CARB reports annual emissions for Fresno County. The California Emissions Inventory Data Analysis and Reporting System (CEIDARS) is a database management system developed to track statewide criteria pollutant emissions (CARB 2025h). The database is divided into reporting years and stores discrete information for stationary, areawide, mobile, and natural sources. This inventory for Fresno County was used to compute emissions per acre per year and apply these rates to the VCIP. The emissions calculations used the 2025 emissions year.

Emissions were based on dust generation, fertilizer and pesticide applications, and farm equipment use. There would be on-road traffic associated with farming operations but CEIDARS does not separate agricultural traffic from overall county traffic. Therefore, the emissions estimated for agricultural activities only include on-site farming emissions and do not include farm-generated traffic on public roads (i.e., truck and worker traffic). Table AQ-4.3-7 shows annual emission rates per acre of criteria pollutants for agricultural activities, VCIP project construction, and VCIP facility operation. It is noted that the VCIP emission rates include emissions from on-road traffic generation whereas on-road traffic generated by agricultural activities is not included in the emissions estimates for the reasons stated above. This results in a minor underestimate of existing agricultural emissions. It is also noted that agricultural activities generally do not include dust controls, while VCIP project construction and operations would include dust controls.

**TABLE 4.3-7**

**COMPARISON OF ANNUAL EMISSIONS FROM VCIP AND EXISTING AGRICULTURAL ACTIVITIES  
(IN TONS PER ACRE PER YEAR)**

Activity	ROG	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Agricultural Activity*</b>	0.002	0.004	0.002	0.006	0.001
<b>VCIP Project Construction**</b>	0.012	0.086	0.166	0.059	0.008
<b>VCIP Facility Operations**</b>	0.00002	0.00014	0.0025	0.0087	0.0001

\* No dust controls.

\*\* With dust controls. (Note: With controls, the dust component comprises approximately 20% of the PM<sub>10</sub> and PM<sub>2.5</sub> of VCIP project construction emissions totals reported in the table.)

Source: Illingworth & Rodkin 2025

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As shown in Table 4.3-7, annual emissions for VCIP construction would be greater than annual emissions per acre of agricultural activity, with VCIP construction resulting in 7 to 87 times greater emissions than agricultural activity depending on the pollutant. During construction, dust generation by VCIP project construction would be approximately double the agricultural dust generation rate per acre. However, once the construction of VCIP projects is completed and the VCIP facilities are fully operational, agricultural emissions would be substantially greater than VCIP operational emissions, as further illustrated in Table 4.3-8.

The calculations of agricultural emissions in Table 4.3-8 apply the full per-acre emissions factor from Table 4.3-7 to the approximately 53,044 acres in agricultural production, and apply only the emissions factor for tilling twice per year on the approximately 81,357 acres of fallowed land in the DFAs. (As noted, the remaining 1,599 acres are mapped as natural or developed/roads.) As shown in Table 4.3-8, the fully operational VCIP solar/BESS facilities would result in an approximately 77 to 95 percent reduction in emissions, depending the pollutant, compared to continued agricultural operations and fallowing over the same acreage. Dust generation during VCIP project operations would be approximately 85 percent (PM<sub>10</sub>) to 98 percent (PM<sub>2.5</sub>) lower than corresponding agricultural dust emissions on a per acre basis.

**TABLE 4.3-8**  
**COMPARISON OF ANNUAL EMISSIONS FROM VCIP AND EXISTING AGRICULTURAL ACTIVITIES**  
**(IN TONS PER YEAR)**

Activity	ROG	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
<b><u>VCIP Project Construction/ Decommissioning Emissions*</u></b> (Average annual emissions during 10 years of VCIP construction and 10 years of VCIP decommissioning)	19.7	174.4	311.2	121.7	16.4
<b><u>VCIP Facility Operations Emissions*</u></b> (Total annual emissions at full VCIP buildout over 136,000 acres of DFAs)	2.4	19.2	33.6	118.1	12.7
<b><u>Agricultural Emissions**</u></b> (Total annual emissions from 136,000 acres of DFAs as farmland)	94.2	99.4	196.4	510.8	75.8
Total annual reduction in emissions during full VCIP Operation (Tons)	-91.8	-80.2	-162.8	-392.7	-63.1
Total annual reduction in emissions during full VCIP Operation (Percent)	-94.7%	-80.7%	-82.9%	-76.9%	-83.3%

\* With dust controls.

\*\* No dust controls. Includes all emissions from cultivated lands and dust emissions from discing of fallowed lands.

Source: Illingworth & Rodkin 2025

For a presentation of year-by-year reductions in overall emissions during the VCIP buildout period, see Appendix B, Table 11. If emissions from off-site vehicular operation associated with agricultural production is taken into account, the relative agricultural emissions would be greater still, although there is no data to quantify how much {AM0011.1}

greater those emissions would be. In sum, during the combined 20-year period of construction and decommissioning, emissions associated with the proposed VCIP would be substantially greater than existing agricultural emissions during those years. However, the VCIP's greater emissions during these years would be far outweighed by the 35 years where VCIP operations would result in substantially lower emissions than agriculture in each of those years. Thus, it can be concluded that, when all phases of VCIP implementation are considered (i.e., construction, operation, and decommissioning), the lifetime emissions from VCIP implementation would result in a substantial reduction in emissions compared agricultural operations on the same land area over the same period of time.

Based on the analysis above, it is concluded that overall emissions from the continuation of existing agricultural activities on the 136,000-acres of VCIP DFAs would be substantially greater than emissions from full VCIP implementation of all VCIP phases over the same land area. Thus, the substantially lower level of emissions resulting from VCIP implementation relative to the alternative of continued agricultural use of the same land area represents a substantial environmental benefit of VCIP implementation.

### ***Dust Generation on Fallowed Land***

In addition to considering overall emissions from agricultural activities, it is worth considering the specific effects of dust generated by agriculture, and by land fallowing in particular. A 2025 article in the online journal "Communications Earth and Environment" reported on the investigation into dust generation from fallowed land in the Central Valley of California (Adebisi, A., et al. 2025). The main findings and conclusions of the study are summarized here. The study found a regional-scale relationship between the expansion of fallowed agricultural lands that has occurred in the Central Valley in recent years and increased windblown dust in the region. In addition to dust generated from agricultural cultivation and harvesting, unplanted plots of agricultural land leave soils exposed and susceptible to wind erosion. Under drought conditions, the combination of reduced soil moisture and higher surface temperatures reduces adhesion between soil particles and results in lower resistance to wind erosion. The increase in windblown dust has implications for public health since increased dust increases exposure to Valley Fever, and exacerbates respiratory diseases like asthma and cardiovascular diseases. The resulting public health impacts affect disadvantaged communities and farm workers in the Central Valley. In addition to exacerbating already poor air quality, increased dust in the atmosphere absorbs radiation which can exacerbate heat waves, and dust deposited in the Sierra can accelerate snow melting. Under conditions of strong winds and increased soil erodibility, there is expected to be an increase in substantial dust storms that can result in severely reduced visibility.

The study also noted that the implementation of the Sustainable Groundwater Management Act (SGMA) will result in substantial removal of additional agricultural land from irrigation, increasing the acreage that would be fallowed. The study stated that unless land fallowed under SGMA is not transitioned to land uses like renewable energy, or unless intentional efforts to reduce anthropogenic dust emissions by inhibiting windborne soil erodibility are implemented (e.g., landscape restoration and covercropping), the adverse effects of dust generation would be further magnified as a result of SGMA implementation (Adebisi, A., et al. 2025). The findings of this study further highlight the importance of repurposing fallowed land to solar use within the VCIP Plan Area. The implementation of MM AG-1, which requires VCIP solar/BESS facilities to implement vegetation and soil management plans throughout each facility's operational life, would provide an effective way to stabilize the soils at the VCIP facilities and help reduce overall potential for dust generation and the adverse health effects associated with it.

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### **Impact AQ-3. Exposure of Sensitive Receptors to Substantial Pollutant Concentrations**

#### **Implementation of the VCIP Energy Resource and Infrastructure Plans would not expose sensitive receptors to substantial pollutant concentrations. (*Less-than-Significant Impact*)**

“Sensitive receptors” are defined as facilities where sensitive population groups, such as children, the elderly, and the acutely and chronically ill, are likely to be located. These land uses include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and medical clinics. There are numerous rural dwellings dispersed throughout the Plan Area, with few small rural communities where residences are more concentrated. There are two elementary schools within the Plan Area, one in Cantua Creek and the other in Westside. There are no medical facilities, or retirement or convalescent homes within or near the DFAs of the Plan Area. The greatest concentration of sensitive receptors in the Plan Area is in the community of Cantua Creek, near the center of the Plan Area, which includes approximately 100 residences and the Cantua Elementary School. As illustrated in Appendix B, Figure 2 of this PEIR, VCIP implementation could involve construction of three DFAs adjacent and near the Cantua Creek community, with a potential gen-tie line segment running approximately 1,400 feet west of the nearest sensitive receptors in the community.

The two main types of pollutants that can occur in high, localized concentrations include CO from vehicular emissions and TACs from diesel exhaust. Other pollutants, such as Pb and SO<sub>2</sub> would not be appreciably emitted by the VCIP projects, and air quality standards for these pollutants are being met throughout the San Joaquin Valley Air Basin. The potential for VCIP projects to result in substantial concentrations of CO or TACs is discussed below.

#### ***Carbon Monoxide***

Carbon monoxide is a localized air pollutant, where the highest concentrations are found very near sources. Since the major source of carbon monoxide (CO) is automobile traffic, elevated concentrations of CO occur near areas of high traffic volume and congestion. Emissions and ambient concentrations of CO have decreased greatly over the past 30 years. These improvements are due largely to the introduction of cleaner burning motor vehicles and reformulated motor vehicle fuels. No exceedances of the state or federal CO standards have been recorded at any of San Joaquin Valley’s monitoring stations in the past 20 years. The San Joaquin Valley Air Basin has attained the CAAQS and NAAQS. This is demonstrated by monitoring data that includes monitoring stations in heavily urbanized areas with large traffic volumes.

Despite this progress, localized CO concentrations are addressed through SJVAPCD’s recommended screening method, which is based on the CO Protocol Analysis developed by the California Department of Transportation (CalTrans) (SJVAPCD 2015c, p. 98). A project has no potential to violate SJVAPCD’s CO standard if neither of the following criteria are met: 1) the level of service (LOS) on one or more streets or intersections would be reduced to LOS E or F by the project; and 2) the project would substantially worsen the LOS at a street or intersection in the vicinity operating at LOS F under pre-project conditions.<sup>13</sup>

Most CO emissions from VCIP projects would occur from traffic generated during construction, but these emissions would be temporary at any one location. As discussed in Section 4.16. *Transportation*, the Traffic Study

<sup>13</sup> As provided in Section 4.16. *Transportation*, LOS E occurs when traffic demand approaches roadway capacity and speeds are seriously curtailed, whereas LOS F occurs when demand exceeds capacity and heavy congestion exists with unstable traffic flow.

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contained in Appendix E of this PEIR indicates that during the construction period all roadways and intersections affected by VCIP traffic would operate at LOS C or better with the implementation of traffic mitigation measures identified in MM TR-1. Potential VCIP projects would be located in rural areas that do not have large volumes of ambient traffic capable of causing or contributing to violations of ambient air quality standards for CO. Therefore, SJVAPCD's CO screening thresholds would be met during the VCIP construction period.

Table 4.3-6 shows that upon full operation of the VCIP facilities, the overall CO emissions would be well below the applicable CO threshold. On an individual project basis, the emissions would be substantially lower than shown in the table. During operation, the typical 250-MW VCIP solar + BESS project would generate approximately 30 vehicle trips per day, on average. Thus, the small volume of operational traffic associated with the VCIP facilities at full buildout would have a negligible effect on CO concentrations along roadways providing access to the facilities. As discussed in Section 4.16. *Transportation*, the Traffic Study (Appendix E of this PEIR) indicates that LOS at intersections and roadways would not change from baseline conditions during full operation of VCIP facilities. Thus, the SJVAPCD CO screening criteria would be met for VCIP operations.

In summary, the construction and operation of VCIP projects would not result in a violation of the CO standard, individually or collectively. Therefore, implementation of the VCIP energy and infrastructure projects would result in a *less-than-significant impact* in terms of exposing sensitive receptors to substantial concentrations of CO.

### **Toxic Air Contaminants**

The TAC that is relevant to the implementation of VCIP is DPM, which would be emitted by: diesel-fueled equipment and vehicles during construction; diesel-fueled vehicles used during project operations including worker vehicles, delivery trucks, and maintenance vehicles; and construction equipment and vehicles employed during decommissioning.

The highest daily levels of DPM would be emitted during construction and decommissioning activities by heavy-duty diesel equipment such as graders, excavators, loaders, and diesel-fueled haul trucks. However, these emissions would be intermittent, would vary throughout a particular project site, and would be temporary in duration (approximately 12-months of total construction activity for any project, and less for decommissioning). During project operations, low-level DPM emissions would result from worker vehicles and maintenance activities, but they would be constant over the lifetime of the project. Operational DPM emissions would mainly result from the use of pickup trucks with a portable water trailer (and pump) that would be used for panel cleaning.

The location with the greatest concentration of sensitive receptors is the community of Cantua Creek, which has the largest population of any unincorporated community with the Plan Area, and also includes the Cantua Elementary School. Since several DFAs are planned in the immediate vicinity of Cantua Creek, the community was identified as the location to perform the HRA to predict the cancer risk and non-cancer health hazards associated with construction of potential VCIP projects in the vicinity (the HRA is included in Appendix B of this PEIR at pages 29-33 and is based on the modeling data contained in Appendix B, Attachment 2). The HRA was performed by Illingworth & Rodkin who conducted dispersion modeling of both project construction activity and construction truck deliveries to calculate DPM and other TAC concentrations at the sensitive receptor locations within Cantua Creek.

The dispersion modeling was used to compute the total increased cancer risk on the maximally exposed individual (MEI). The increased cancer risk for the MEI from project construction, operations, and

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decommissioning was calculated to be 2.26 in one million, which is well below the Air District's significance threshold of 20 in one million. (It is noted that the HRA assumes lifetime (70-year) exposure to operational DPM emissions, whereas actual exposure would be about 35 years (i.e., the operating life of the solar/BESS project nearest to a given sensitive receptor); therefore, the calculated cancer risk is slightly overestimated.) Application of the non-cancer Health Index (HI) found that the chronic HI from DPM would be less than 0.1 at all receptor locations, well below the CEQA threshold of 1.0. (See Appendix B of this PEIR for a detailed discussion of methods and results of the dispersion modelling.)

Since the results of the HRA for Cantua Creek represent the VCIP's maximum potential to expose sensitive receptors to pollutant concentrations during buildout and operation, potential projects elsewhere in the Plan Area would result in similar or lower levels of health risk. Therefore, the health impacts associated with exposure to DPM from VCIP project construction and operation are not anticipated to be significant. Implementation of the VCIP energy and infrastructure projects, individually and collectively, would result in a *less-than-significant impact* in terms of exposing sensitive receptors to substantial concentrations of TACs.

**Mitigation Measures: No mitigation is required.**

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#### **Impact AQ-4. Other Emissions (such as Odors) Adversely Affecting a Substantial Number of People**

**Implementation of the VCIP Energy Resource and Infrastructure Plans would not result in other emissions (such as those leading to odors) that would adversely affect a substantial number of people. (*Less-than-Significant Impact*)**

During construction of proposed VCIP projects, the operation of various diesel-powered vehicles and equipment would create localized odors. These odors would be temporary and would dissipate relatively quickly and thus would not likely be noticeable for extended periods of time beyond the boundaries of the particular project site. Most if not all diesel odors would be diluted in the air and disperse into the atmosphere before reaching the nearest sensitive receptors. Implementation of the VCIP Energy Resource and Infrastructure Plans would not result in other emissions, including emissions leading to odors, which would adversely affect a substantial number of people; therefore, the impact would be *less than significant*.

**Mitigation Measures: No mitigation is required.**

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### **4.3.3.2. TRANSMISSION CORRIDORS OUTSIDE THE VCIP**

The transmission corridors for delivery of solar generation from potential VCIP projects to urban electricity markets in northern and southern California have been identified at a conceptual level in this PEIR to allow a general discussion of environmental impacts associated with transmission line development for informational

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purposes. These transmission delivery corridors extend far beyond the District's boundaries and are not part of the proposed VCIP. Planning and approval of these outside transmission lines are under the jurisdiction of the state and federal energy regulatory agencies, public utilities, and cities and counties traversed by the transmission corridors. The following discussion provides an overview of potential impacts of the outside transmission lines with respect to air quality.

The outside transmission corridors would include a total of approximately 549 miles of transmission line in four Air Basins where air emissions are regulated by five air quality management districts. Approximately, 436 miles of transmission line would be under the SJVAPCD's jurisdiction, and the remaining 113 miles would be divided among four air districts including the Monterey Bay Air Resources District (MBARD) (55 miles), the Bay Area Air Quality Management District (BAAQMD) (5 miles), the East Kern Air Pollution Control District (EKAPCD) (25 miles), and the Antelope Valley Air Quality Management District (AVAQMD) (28 miles).

The six outside transmission lines would be constructed as separate projects, with the longest transmission line project extending 177 miles from the VCIP Substation 5 south to the Vincent Substation in northern Los Angeles County. Approximately 126 miles of this transmission line would be within the SJVAPCD, with the remaining 51 miles within EKAPCD and AVAQMD. It is likely that annual emissions during construction would exceed the Air District's thresholds for one or more criteria pollutants (e.g., NO<sub>x</sub> and PM<sub>10</sub>). The fugitive dust emissions would be mitigated through implementation of dust control measures required in SJVAPCD Regulation VIII, and exhaust emissions would be mitigated through use of Tier 4 construction equipment. Each project's compliance with ISR would provide substantial additional reductions in emissions, and the execution of a VERA would reduce emissions of pollutants that remain above thresholds after ISR implementation to less-than-significant levels. This would also apply to other outside transmission projects within the San Joaquin Valley Air Basin. For projects that are partially within other air districts, the lengths of transmission line to be constructed within those districts would be substantially shorter, as noted above, so the emissions associated with construction of those segments would also be lower. In all cases, the air districts have dust control regulations and requirements to prepare and implement fugitive dust control plans similar to the requirements of the SJVAPCD. The air districts would also impose measures to reduce construction exhaust emissions, which in combination with the relatively small quantities of emissions generated by these short transmission segments, would keep overall emissions to below the applicable thresholds within those segments. Adherence to applicable emissions thresholds would make these projects consistent with all applicable air quality plans.

The outside transmission projects would also result in the emission of toxic air contaminants (TACs) from diesel construction equipment. There are numerous sensitive receptors in the vicinity of the transmission corridors, primarily rural residences where occupants would be subject to emissions of diesel particulate matter (DPM) which has potentially adverse health effects. However, given that transmission construction would proceed rapidly along the corridors, the duration of construction activity at any location would be very short. As such, the exposure of individuals to TACs would be brief and would result in lifetime exposures that would be far below applicable thresholds for new cancer cases. Therefore, the construction of the outside transmission lines would not result in a significant health hazard due to diesel particulate emissions.

Regarding odors, the operation of various diesel-powered vehicles and equipment during transmission line construction would create localized odors. These odors would be temporary and would dissipate relatively quickly and thus would not likely be noticeable for extended periods of time at receptors in the vicinity. There would be no other emissions sources associated with the transmission projects.

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### 4.3.3.3. CUMULATIVE IMPACTS

With respect to regional air quality, the SJVAPCD guidance (GAMAQI) states that any project that would individually have a significant impact on regional air quality (i.e., exceed significance thresholds for ROG or NO<sub>x</sub>) would also be considered to have a significant cumulative air quality impact. As discussed under Impact AQ-2, the emissions of ozone precursor pollutants (ROG and NO<sub>x</sub>) and PM<sub>10</sub> from individual VCIP projects would be less-than-significant with mitigation. GAMAQI also states: “[a] Lead Agency may determine that a project’s incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program, including, but not limited to an air quality attainment or maintenance plan that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located” (SJVAPCD 2015c, p. 66). As discussed under Impact AQ-1, each individual VCIP project would fulfill its share of achieving the Air District’s emission reduction commitments in its PM<sub>10</sub> and Ozone attainment plans through its obligation to implement emission reduction measures under the Air District’s ISR (Rule 9510). Therefore, the individual VCIP projects would fully comply with the applicable air quality plans and would not conflict with or obstruct their implementation. Since each VCIP project would comply with the applicable air quality plans, overall implementation of the VCIP Energy Resource and Infrastructure Plans would also comply with the applicable air quality plans. Therefore, the cumulative regional air quality impacts of VCIP implementation would *not be significant* and the contribution from VCIP projects, individually and collectively, *would not be considerable*.

Relevant local air pollutants would include PM<sub>10</sub> emissions and TACs from construction activity. Construction period PM<sub>10</sub> emissions would be localized. As discussed under Impact AQ-2, the combined construction exhaust and dust emissions from each individual VCIP project would be less than the PM<sub>10</sub> significance threshold of 15 tons with mitigation (i.e., dust controls and other emission controls). Since the total PM<sub>10</sub> emissions would be below the total PM<sub>10</sub> significance threshold for each project, construction period total PM<sub>10</sub> emissions impacts would be less than significant for the overall implementation of the proposed VCIP.

In evaluating cumulative PM<sub>10</sub> emissions, only those approved and pending projects in the immediate project vicinity are considered because PM<sub>10</sub> concentrations disperse rapidly from the source. Immediately adjacent to DFAs, there are three projects that have been approved or are pending approval but have not yet been constructed. These include the approved Luna Valley and Sonrisa solar projects, and the pending Heartland Solar Project, all of which are located adjacent to DFAs along SR-33 between W. American and W. Manning Avenues. For each of those projects, the construction emissions for all criteria pollutants, including PM<sub>10</sub>, were calculated to be below the Air District’s thresholds, and operational emissions would be very low. It is anticipated that the potential VCIP solar projects in this area would commence construction in 2030 at the earliest. The three non-VCIP solar projects in the vicinity would likely be constructed and fully operational by 2030, so it is unlikely that the construction of the VCIP projects would overlap with the construction of these non-VCIP solar projects. There are no other current or foreseeable projects in the vicinity of VCIP DFAs which would be under construction at the same time as the potential VCIP projects. In the unlikely event that the construction of the VCIP projects were to overlap with any other nearby projects, the combined PM<sub>10</sub> concentrations at the nearest common receptors would be negligible. This is because there are no other cumulative projects that are within one mile of both a DFA and a sensitive receptor, and because PM<sub>10</sub> concentrations disperse rapidly from the source and would be negligible at that distance. Therefore, the cumulative PM<sub>10</sub> impact associated with the VCIP projects would be *less-than-significant*, and the contribution of VCIP projects, individually and collectively, to cumulative PM<sub>10</sub> emissions *would not be considerable*.

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With respect to cumulative emissions of TACs, it is important to note that Diesel Particulate Matter (DPM) concentrations diminish rapidly from the source. Pollutant dispersion studies by CARB have shown that there is about a 70 percent drop-off in DPM concentrations at approximately 500 feet from the source (BAAQMD 2017, p. 8-7). This is reflected in the screening tables prepared by the Bay Area Air Quality Management District (BAAQMD) to determine distances where TAC exposures would be reduced to less than significant levels. For the largest construction projects, the recommended distance is up to 1,000 feet from the sensitive receptor location (BAAQMD 2010, p. 9). Thus, multiple sources of DPM emissions must all be proximate to a receptor to have a significant additive effect to DPM concentrations at the receptor site. As discussed under Impact AQ-3, the most affected sensitive receptors to VCIP project development would be subject to increased cancer risk of approximately 2.26 cases in one million from project construction, operation and decommissioning. All other sensitive receptors in the Plan Area would be subject to lower levels of DPM exposure.

SJVAPCD's TAC significance criterion for an individual project is an increase in cancer risk of more than 20 new cancer cases per million persons as measured over a 70-year lifetime for the maximally exposed individual (SJVAPCD 2015b). For context, it is noted that the lifetime cancer risk to the population from all sources is approximately 250,000 cases per million (or 1 case per 4 individuals) (SJVAPCD 2015c, p. 100). The 20 per million significance criterion is applied to individual projects where there is a potential for a significant health impact to nearby sensitive receptors. This same significance threshold is applied by SJVAPCD for cumulative TAC impacts, although the Air District considers it to be stringent (SJVAPCD 2015c, p. 110; SJVAPCD 2015b).

At the location of the maximally exposed individuals in Cantua Creek, there are currently no pending or approved projects within at least one mile of the community. As such, there are no sources of TACs in the vicinity which could combine with VCIP project TACs and result in a cumulatively greater cancer risk than estimated for the VCIP projects above. Similarly, there are no locations elsewhere in the Plan Area or immediately adjacent area where the sensitive receptors would be subject to TACs from VCIP projects and other approved and pending projects within one mile of the receptor location. As such, there would be no cumulatively considerable increase in cancer risk anywhere in the Plan Area or immediately adjacent areas. Therefore, the cancer risk of up to 2.26 cases per million estimated for Cantua Creek as a result of VCIP project development would also represent the cumulatively greatest cancer risk. Since this cancer risk is well below the significance threshold of 20 cases per million, the cumulative health risk impact associated with the VCIP implementation would be *less than significant*, and the VCIP's contribution to the cumulative health risk impact would *not be considerable*.

Regarding odors, the operation of various diesel-powered vehicles and equipment during construction would create localized odors. These odors would be temporary and would dissipate relatively quickly and thus would not likely be noticeable for extended periods of time beyond the boundaries of the cumulative projects. Most if not all diesel odors carried off-site would disperse into the atmosphere before reaching the nearest sensitive receptors. As discussed above for TACs, there are no locations in the Plan Area or immediately adjacent areas where any sensitive receptors would be subject to odors from VCIP projects and other approved and pending projects within one mile of the receptor location. Therefore, the potential for cumulative odor impacts to occur with VCIP implementation would be *less than significant*, and the VCIP's contribution to the cumulative odor impact would *not be considerable*.

The outside transmission lines would result in emissions during construction, which would be reduced to less-than-significant levels on an individual project basis through implementation of dust and exhaust emissions controls required by the applicable air quality management districts. Since the transmission corridors pass

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through rural areas, the cumulative development would mainly consist of dispersed residential development pursuant to general plan and zoning regulations of each affected county. The emissions from this cumulative development would be minor and would not combine with the emissions from transmission line construction to result in significant cumulative air quality impacts.

In summary, the less-than-significant air quality impacts associated with VCIP implementation, combined with the less-than-significant air quality impacts of the other cumulative projects, would not result in a cumulatively significant impact. Therefore, the *cumulative impact would be less than significant*, and the *contribution from VCIP projects would not be cumulatively considerable*.

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