

This chapter evaluates the air quality impacts of implementing the 2030 Merced County General Plan (2030 General Plan). As established in the Notice of Preparation for the proposed 2030 General Plan (see Appendix A, *Notice of Preparation*), urban development and other activities subject to the Plan may result in changes in the emissions of air pollutants regulated by the federal and state agencies. The following chapter discusses only those pollutants directly regulated by federal and state agencies, and the local air district; greenhouse gas emissions and climate change are evaluated in Chapter 11, *Global Climate Change*, of this Draft PEIR.

This analysis includes a review of applicable regulations, requirements, plans, and policies from the following federal, state, regional, and local sources:

- United States Environmental Protection Agency (EPA);
- California Air Resources Board (ARB); and
- San Joaquin Valley Air Pollution Control District (SJVAPCD).

Existing air quality conditions in the unincorporated county were determined by a review of the regional air quality monitoring stations and the current criteria pollutant attainment status within the San Joaquin Valley Air Basin (SJVAB). Rules and regulations affecting air quality were identified by a review of federal and state regulations, and SJVAPCD rules and regulations. Potential air quality impacts were determined by comparing potential urban development proposed under the 2030 General Plan to the existing environment, using guidelines adopted by state agencies and the SJVAPCD.

The air quality setting includes two sections: an environmental setting section and a regulatory environment section. The environmental setting reviews the federal and state criteria pollutant attainment status for the SJVAB, the estimated criteria pollutant emissions in Merced County and the SJVAB, and recent air pollutant monitoring data.

The regulatory environment section summarizes applicable air quality regulations, requirements, plans, and policies. Rules and regulations influencing air quality were identified by a review of federal, state, and local regulations.

The proposed 2030 General Plan's air impacts were evaluated using significance criteria and analysis methodologies approved by the SJVAPCD.

### 7.1 SETTING

The following air quality setting section summarizes a more detailed air setting discussion included in the Air Quality section of the General Plan Background Report (Merced County 2007; updated 2012). That document is incorporated by reference into this Draft PEIR pursuant to State CEQA Guidelines Section 15150 as though fully set forth herein. The updated Background Report is available for download from the Merced County General Plan website at:

<http://www.co.merced.ca.us/index.aspx?NID=1926>.

Copies of the Background Report may be viewed during standard business hours (8:30 a.m. to 4:30 p.m.), Monday through Friday, at the Merced County Planning and Community Development Department, 2222 M Street, Merced, California 95340, and at the Main Branch of the Merced County Library located at 2100 O Street, Merced, California 95340.

### 7.1.1 ENVIRONMENTAL SETTING

The Background Report's discussion of the air quality setting describes the federally- and state-identified criteria pollutants, the status of these pollutants in the SJVAB, and emission sources in the county and SJVAB. The criteria pollutants evaluated in the Background Report include ozone (O<sub>3</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), carbon monoxide, nitrogen dioxide, lead, sulfur dioxide, sulfates, and hydrogen sulfide. Air quality resources discussed in the Background Report include:

- San Joaquin Valley Air Basin.** The SJVAB includes San Joaquin County, Stanislaus County, Madera County, Fresno County, Kings County, Tulare County, and a portion of Kern County. Merced County is in the north-central portion of the SJVAB. The SJVAB is bordered on three sides by mountains: the Sierra Nevada to the east, the Coast Ranges to the west, and the Tehachapi mountains to the south. The SJVAB is open to the north to the Sacramento Valley. The San Joaquin Valley is approximately 250 miles long and averages approximately 35 miles in width. The mountains surrounding the SJVAB restrict air movement through and out of the basin, and as a result, impede the dispersion of pollutants from the basin.
- Attainment Status.** State and federal ambient air quality standards have been set for several pollutants (see Table 7-1). The SJVAB is a "severe" nonattainment area for the state one-hour ozone standard, "extreme" nonattainment for the federal eight-hour ozone standard, nonattainment for federal and state PM<sub>2.5</sub> standards, attainment (maintenance) for the federal PM<sub>10</sub> standard, and nonattainment for the state PM<sub>10</sub> standard. The Air Basin has an attainment or unclassified status for the applicable federal and state standards for carbon monoxide, nitrogen dioxide, lead, sulfur dioxide, sulfates, and hydrogen sulfide (California Air Resources Board, 2011a).

**Table 7-1 State and Federal Ambient Air Quality Standards**

| Contaminant                             | Averaging Time         | State Standards <sup>1</sup> | Primary Federal Standards <sup>2</sup> | Secondary Federal Standards <sup>2</sup> |
|---|------------------------|------------------------------|--|--|
| Ozone                                   | 1 hour                 | 0.09 ppm                     | -                                      | -  |
|   | 8 hour                 | 0.070 ppm <sup>4</sup>       | 0.075 ppm                              | 0.075 ppm                                |
| Particulate Matter (PM <sub>10</sub> )  | 24 hour                | 50 µg/m <sup>3</sup>         | 150 µg/m <sup>3</sup>                  | 150 µg/m <sup>3</sup>                    |
|   | Annual arithmetic mean | 20 µg/m <sup>3</sup>         | -                                      | -  |
| Particulate Matter (PM <sub>2.5</sub> ) | 24 hour                | -                            | 35 µg/m <sup>3</sup> (See footnote 5)  | 35 µg/m <sup>3</sup>                     |
|   | Annual arithmetic mean | 12 µg/m <sup>3</sup>         | 15.0 µg/m <sup>3</sup>                 | 15.0 µg/m <sup>3</sup>                   |
| Carbon Monoxide                         | 8 hour                 | 9.0 ppm                      | 9 ppm                                  | -  |
|   | 1 hour                 | 20 ppm                       | 35 ppm                                 | -  |
| Nitrogen Dioxide                        | Annual arithmetic mean | 0.030 ppm                    | 0.053 ppm                              | 0.053 ppm                                |
|   | 1 hour                 | 0.18 ppm                     | 0.1 ppm                                | -  |

**Table 7-1 State and Federal Ambient Air Quality Standards**

| Contaminant  | Averaging Time          | State Standards <sup>1</sup>   | Primary Federal Standards <sup>2</sup> | Secondary Federal Standards <sup>2</sup> |
|--|-------------------------|--|--|--|
| Sulfur Dioxide   | 24 hour                 | 0.04 ppm   | -                                      | -  |
|  | 3 hour                  | -  | -                                      | 0.5 ppm                                  |
|  | 1 hour                  | 0.25 ppm   | 75 ppb                                 | -  |
| Lead   | 30 day average          | 1.5 µg/m <sup>3</sup>  | -                                      | -  |
|  | Calendar quarter        | -  | 1.5 µg/m <sup>3</sup>                  | 1.5 µg/m <sup>3</sup>                    |
|  | Rolling 3-Month Average | -  | 0.15 µg/m <sup>3</sup>                 | -  |
| Visibility reducing particles  | 8 hour                  | See footnote 3   | -                                      | -  |
| Sulfates   | 24 hour                 | 25 µg/m <sup>3</sup>   | -                                      | -  |
| Hydrogen Sulfide   | 1 hour                  | 0.03 ppm   | -                                      | -  |
| Vinyl Chloride   | 24 hour                 | 0.01 ppm   | -                                      | -  |
| ppm – parts per million by volume<br>ppb – parts per billion by volume<br>µg/m <sup>3</sup> – micrograms per cubic meter |                         | PM <sub>10</sub> – particulate matter less than 10 microns in diameter.<br>PM <sub>2.5</sub> – particulate matter less than 2.5 microns in diameter. |  |  |

## Notes:

- California standards for ozone, carbon monoxide, sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter – PM<sub>10</sub>, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour, or 24-hour average then some measurements may be excluded. In particular, measurements that the ARB determines would occur less than once per year on average are excluded.
- National standards other than for ozone, particulates, and those based on annual averages are not to be exceeded more than once per year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4<sup>th</sup> highest daily concentrations is 0.075 ppm (75 ppb) or less. The 24-hour PM<sub>10</sub> standard is attained when the 3-year average of the 99<sup>th</sup> percentile of monitored concentrations is less than 150 µg/m<sup>3</sup>. The 24-hour PM<sub>2.5</sub> standard is attained when the 3-year average of 98<sup>th</sup> percentiles is less than 35 µg/m<sup>3</sup>. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM<sub>10</sub> is met if the 3-year average falls below the standard at every site. The annual PM<sub>2.5</sub> standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard.
- Statewide Visibility Reducing Particles Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.
- The 8-hour CA ozone standard was approved by the California Air Resources Board on April 28, 2005 and became effective on May 17, 2006.
- U.S EPA lowered the 24-hour PM<sub>2.5</sub> standard from 65 µg/m<sup>3</sup> to 35 µg/m<sup>3</sup> in 2006.

Source: California Air Resources Board, 2010a.

- Ozone Emissions.** Ozone is not emitted directly into the environment, but is generated from complex chemical reactions between reactive organic gases (ROG) and oxides of nitrogen (NO<sub>x</sub>) that occur in the presence of sunlight. Major ROG and NO<sub>x</sub> generators in the SJVAB include: motor vehicles and farming equipment such as tractors, feed trucks, and pumps; farming operations; and solvent evaporation. Total estimated ROG emissions in 2010 were 10,622 tons per year in Merced County and 131,692 tons per year in the San Joaquin Valley. Total estimated NO<sub>x</sub> emissions in 2010 were 17,447 tons per year in Merced

County compared to total estimated NO<sub>x</sub> emissions in the San Joaquin Valley in 2010 of approximately 191,151 tons per year (ARB 2008).

Ozone levels usually build up during the day and peak in the afternoon hours. Short-term exposure can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, it can aggravate existing respiratory diseases such as asthma, bronchitis and emphysema. Chronic exposure to high ozone levels can permanently damage lung tissue. Ozone can also damage plants and trees, and materials such as rubber and fabrics.

- **Particulate Emissions.** Particulate matter emissions are generally monitored as either PM<sub>10</sub> or PM<sub>2.5</sub> emissions. PM<sub>10</sub> and PM<sub>2.5</sub> are atmospheric particulate matter having a particle size less than 10 and 2.5 micrometers (µm) in diameter, respectively. Both PM<sub>10</sub> and PM<sub>2.5</sub> can be divided into primary and secondary forms. Primary particulate matter is in the same chemical form in which it was emitted into the atmosphere. Secondary particulate matter is formed through atmospheric reactions of gaseous sulfur dioxide (SO<sub>2</sub>) and nitrogen oxide (NO<sub>x</sub>) precursor emissions. Ammonia emissions from dairies are considered to be precursors to PM<sub>2.5</sub> formation.
  - ✓ Major sources of PM<sub>10</sub> in Merced County include farming operations, paved and unpaved road dust, food and agriculture industrial processes, managed burning and disposal, heavy-duty diesel trucks, and fugitive windblown dust. Total estimated PM<sub>10</sub> emissions in 2010 were 11,133 tons per year in Merced County and 110,194 tons per year in the San Joaquin Valley (ARB 2008).
  - ✓ PM<sub>2.5</sub> sources in Merced County include miscellaneous processes, on-road motor vehicles, cleaning and surface coatings, industrial processes, and fuel combustion. The ARB estimates PM<sub>2.5</sub> emissions for 2010 to be 3,176 tons annually in Merced County and 38,070 tons annually in the San Joaquin Valley (ARB 2008).

Extended exposure to particulate matter can increase the risk of chronic respiratory disease. PM<sub>10</sub> is of concern because it bypasses the body's natural filtration system more easily than larger particles, and can lodge deep in the lungs. The EPA and the state of California revised their PM standards several years ago to apply only to these fine particles. PM<sub>2.5</sub> poses an increased health risk because the particles can deposit deep in the lungs and contain substances that are particularly harmful to human health. Motor vehicles are currently responsible for about half of particulates in the San Joaquin Valley Air Basin. Wood burning in fireplaces and stoves is another large source of fine particulates.

- **Merced County Emissions.** Ambient pollutant concentrations measured from 2005 through 2010 at two monitoring stations in Merced County show violations of the federal 8-hour, state 8-hour, and state 1-hour ozone standards, the 24-hour and annual state PM<sub>10</sub> standards, and the federal 24-hour, federal annual, and state annual PM<sub>2.5</sub> standards.
- **Toxic Air Contaminants.** In addition to the criteria air pollutants listed above, another group of pollutants, commonly referred to as toxic air contaminants (TAC) or hazardous air pollutants can result in health effects that can be quite severe. Many TACs are confirmed or suspected carcinogens, or are known or suspected to cause birth defects or neurological damage. Secondly, many TACs can be toxic at very low concentrations. For some chemicals, such as carcinogens, there are no thresholds below which exposure can be considered risk-free.

Industrial facilities and mobile sources are significant sources of TACs. Sources of TACs go beyond industry. Various common urban facilities also produce TAC emissions, such as gasoline stations (benzene), hospitals (ethylene oxide), and dry cleaners (perchloroethylene). Automobile exhaust also contains TACs such as benzene and 1,3-butadiene. Most recently, diesel particulate matter was identified as a TAC by the ARB. Diesel PM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances.

The major conclusions of the Background Report with respect to existing air quality conditions in Merced County and the SJVAB are set forth below.

- Existing air quality emissions exceed federal 8-hour, state 8-hour, and state 1-hour ozone standards, 24-hour and annual state  $PM_{10}$  standards, and federal 24-hour, Federal annual, and state annual  $PM_{2.5}$  standards. This is a result of the topography and climate creating inversion layers and the high volumes of air pollutant emissions from major sources within the SJVAB: confined animal facilities, agricultural activities, on- and off- road vehicles, and other industrial activities.
- The SJVAB does not meet ozone and particulate matter standards. Given existing air quality conditions, most new development projects would need to comply with various air quality permits and regulations to reduce air pollutant emissions.
- SJVAPCD's Indirect Source Review Rule 9510 applies to all new developments within Merced County exceeding a certain size. Rule 9510 tends to favor mixed use and neo-traditional development patterns as compared to suburban sprawl land use patterns.
- Confined animal facilities and farming operations are subject to stringent rules and regulations. Agricultural operations must comply with New Source Review requirements, associated SJVAPCD permits, health risk assessments, and other air quality assessment and modeling requirements.

### 7.1.2 REGULATORY SETTING

The Background Report's discussion of air quality resources regulatory setting includes the following federal, state, and regional regulations:

#### FEDERAL

- **Clean Air Act.** The federal 1970 Clean Air Act (CAA) authorized the establishment of national health-based air quality standards, and also set deadlines for their attainment. The federal Clean Air Act Amendments of 1990 (1990 CAA) made major changes in deadlines for attaining National Ambient Air Quality Standards (NAAQS) and in the actions required of areas of the nation that exceeded these standards. Under the CAA, state and local agencies in areas that exceed the NAAQS are required to develop state implementation plans (SIP) to show how they will achieve the NAAQS for ozone by specific dates (42 USC 7409, 7411). EPA is responsible for enforcing the NAAQS primarily through reviewing SIPs that are prepared by each state.

- **Clean Air Ozone Rules.** The Clean Air Ozone Rules of the CAA, effective June 15, 2005, replaced the NAAQS 1-hour ozone standard with the 8-hour ozone standard and outlined a process for reducing ground level ozone pollution. This rule also issued new designations on attainment and nonattainment. Although the federal 1-hour ozone rules have been revoked, the SJVAPCD continues to implement parts of its federal 1-Hour Ozone Attainment Plan including control measures, Reasonable Available Control Technology, and motor vehicle inspection and maintenance programs that were in effect as of June 15, 2004.

## STATE

- **California Air Resources Board.** In California, the ARB is responsible for preparing and enforcing the federally-required SIP in an effort to achieve and maintain NAAQS and State Ambient Air Quality Standards (SAAQS), which were developed as part of the California CAA adopted in 1988. SAAQS for criteria pollutants equal or surpass NAAQS, and include other pollutants for which there are no NAAQS. In addition, ARB is responsible for assigning air basin attainment and nonattainment designations in California. Air basins are designated as being in attainment if the levels of a criteria air pollutant meet the SAAQS for the pollutant, and are designated as being in nonattainment if the level of a criteria air pollutant is higher than the SAAQS. The ARB is the oversight agency responsible for regulating statewide air quality, but implementation and administration of SAAQS is delegated to several regional air pollution control districts and air quality management districts. These districts have been created for specific air basins, and have principal responsibility for: developing plans to meet SAAQS and NAAQS; developing control measures for non-vehicular sources of air pollution necessary to achieve and maintain SAAQS and NAAQS; implementing permit programs established for the construction, modification, and operation of air pollution sources; enforcing air pollution statutes and regulations governing non-vehicular sources; and developing employer-based trip reduction programs. The SJVAPCD is the air district with air quality oversight responsibilities in Merced County.
- **Air Toxics and Sensitive Receptors.** The ARB's research has substantiated that exposure to high levels of toxic air contaminants (TAC) poses health risks to sensitive populations. (TACs are often referred to as hazardous air pollutants.) Air toxics sources include: high traffic freeways and roads, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and large gas dispensing facilities. Air toxic sources generate high levels of diesel particulate matter emissions and other cancer causing chemicals. ARB recommends that local jurisdictions adopt land use policies so that sensitive land uses are located a minimum of 500 to 1,000 feet from sources of TACs. Where this minimum separation is not achievable, ARB recommends that local jurisdictions perform health risk assessments (HRA) to determine the cancer risk potential of individual land use proposals locating an air toxics source (e.g., high volume freeway) close to a sensitive land use (e.g., residential uses) (ARB 2005).

## SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT

- **San Joaquin Valley Air Pollution Control District.** The SJVAPCD, the lead air quality regulatory agency for Merced County and the SJVAB, has jurisdiction over all point and area sources (except for mobile sources, consumer products, and pesticides). The SJVAPCD and ARB have joint responsibility for attaining and maintaining the NAAQS and SAAQS in the

SJVAB. SJVAPCD's primary approach to implementing air quality plans is through adopting rules and regulations. The district has permit authority over jurisdictional stationary sources. The District's "Guide for Assessing and Mitigating Air Quality Impacts" (GAMAQI) provides lead agencies, consultants and project applicants with uniform procedures for addressing air quality impacts in environmental documents (SJVAPCD 2002). The District has also published "Air Quality Guidance for General Plans" (2003) which provides guidance on developing and implementing local policies and programs to be included in a General Plan.

- **SJVAPCD Ozone Plan.** The ozone attainment demonstration plan developed by the SJVAPCD was incorporated into the SIP for ozone. The control measures included in the plan apply to currently regulated sources under SJVAPCD jurisdiction, but the cooperation of other federal, state, and local agencies is required to achieve attainment with federal ozone standards. The EPA and ARB are responsible for emission controls of aircraft, farming equipment, pesticides, consumer products, and motor vehicles that significantly contribute to the ozone pollution in the SJVAB. The 8-hour Ozone Attainment Demonstration Plan (SJVAPCD 2007a) sets out the strategy to attain the federal 8-hour ozone standard by 2024. In addition, SJVAPCD's 1-Hour "Extreme" Ozone Attainment Plan's control measures apply though EPA revoked the federal 1-hour ozone standard (SJVAPCD 2005).
- **SJVAPCD PM<sub>10</sub> Plan.** The 2007 PM<sub>10</sub> Maintenance Plan and Request for Redesignation provides verification of continued PM<sub>10</sub> attainment, a contingency plan, an attainment emissions inventory, a maintenance demonstration, and a demonstration of the state's monitoring network (SJVAPCD 2007b). A previously-adopted 2003 PM<sub>10</sub> Plan led to amendments to the SJVAPCD's Regulation VIII, which is designed to limit fugitive dust emissions from paved and unpaved roads, farming, windblown dust sources, and construction/demolition activities.
- **SJVAPCD PM<sub>2.5</sub> Plan.** The PM<sub>2.5</sub> attainment plan was adopted in May 2008 (SJVAPCD 2008). This plan identifies measures to meet the EPA's established annual (15 micrograms per cubic meter (µg/m<sup>3</sup>)) and 24-hour standards (35 µg/m<sup>3</sup>) for the fine fraction of particulates.
- **Indirect Source Review (Rule 9510).** Rule 9510 requires that all new discretionary development and transportation and transit projects reduce NO<sub>x</sub> and PM<sub>10</sub> emissions. Emission reduction measures that could be included in a development proposal include (but are not limited to): locating the project within one-half mile of a retail/commercial facility; locating a project within one-half mile of a mix of uses that include both residential housing and employment; locating a project within one-half mile of existing or planned bike routes; installing convenient pedestrian paths; designing pedestrian-oriented local street networks such as interconnected grid, short block faces, and narrow streets; including buildings with energy efficiency ratings above minimum state Title 24 requirements; requiring the use of electrical maintenance equipment; providing on-site bus stops and signage; and providing free annual bus passes.

## 7.2 ENVIRONMENTAL EFFECTS

The air quality impact analysis evaluates whether buildout under the 2030 General Plan project could result in significant air quality impacts.

### 7.2.1 SIGNIFICANCE CRITERIA

According to the State CEQA Guidelines Appendix G: Environmental Checklist Form, Section III. Air Quality, and SJVAPCD guidance, a significant impact would occur with respect to air quality if the proposed 2030 General Plan would:

- Conflict with or obstruct implementation of the applicable air quality plan. *(III.a)*
- Violate any air quality standard as established by the EPA or ARB, or contribute substantially to an existing or projected air quality violation, in comparison to the SJVAPCD thresholds below. *(III.b)*
- Result in a cumulatively considerable net increase of any criteria air pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors and particulate matter). *(III.c)*
- Expose sensitive receptors to substantial criteria air pollutant concentrations. *(III.d)*
- Create objectionable odors affecting a substantial number of people. *(III.e)*

Due to the general nature of the above standards, the SJVAPCD has developed quantifiable significance thresholds. The following significance thresholds were obtained from the 2002 SJVAPCD Guide for Assessing and Mitigating Air Quality Impacts (SJVAPCD 2002). Specifically, a significant impact would occur if implementation of the project would result in emissions that exceed the following SJVAPCD thresholds:

- NO<sub>x</sub>: 10 tons per year
- ROG: 10 tons per year
- PM<sub>10</sub> or PM<sub>2.5</sub>: 15 tons per year.

Although the SJVAPCD does not include a significance threshold for PM<sub>10</sub> or PM<sub>2.5</sub>, recent informal guidance provided by SJVAPCD has established the PM<sub>10</sub> and PM<sub>2.5</sub> thresholds listed above (Barber 2011).

According to the SJVAPCD's guidance, operational and construction emissions are considered to be a less-than-significant impact if fugitive dust (PM<sub>10</sub> and PM<sub>2.5</sub>) emissions are below the significance level listed above. In addition, the SJVAPCD Regulation VIII requires fugitive dust control measures to be implemented for all projects involving earthmoving, and for travel on unpaved roads. Therefore, a comparison of project emissions to the 15 tons-per-year for PM<sub>10</sub> and PM<sub>2.5</sub> and 10 tons-per-year NO<sub>x</sub> and ROG thresholds serves as a surrogate for evaluating whether the proposed 2030 General Plan would violate ambient air quality standards.

For carbon monoxide (CO), the SJVAPCD's guidance states that CO concentrations should be evaluated for areas with substantial traffic congestion where the project would cause the traffic level of service to be reduced to a level of service of E or F (SJVAPCD 2002).



For toxic air contaminants and odors, SJVAPCD's guidance states that for General Plans, land use designations must be evaluated to determine whether they pose any type of land use conflict (SJVAPCD 2002).

To mitigate potential impacts at the General Plan level, SJVAPCD's guidance recommends the use of policy statements, design standards, and community-wide programs. This is because a General Plan only identifies the eventual use of a land parcel in generalized terms.

## 7.2.2 ANALYSIS METHODOLOGY

### Criteria Pollutant Methodology - Construction

No attempt has been made to quantify construction emissions associated with buildout of the 2030 General Plan because it is impossible to accurately estimate where and when construction would occur. Also, the SJVAPCD has not established construction emission thresholds. Instead, they have implemented rules to limit construction emissions. Those rules include Regulation VIII, which is designed to limit fugitive dust generation from a variety of construction activities and from agricultural sources. The SJVAPCD's Rule 9510 limits  $\text{NO}_x$  and  $\text{PM}_{10}$  emissions from construction (and operational) activities associated with land use development. Construction activities associated with buildout of the 2030 General Plan must comply with both Regulation VIII and Rule 9510. Consequently, construction associated with the 2030 General Plan is evaluated for consistency with SJVAPCD's applicable rules.

### Criteria Pollutant Methodology - Operations

As set forth in Appendix D, *Air Quality Technical Appendix*, of this PEIR, a combination of air quality assessment tools was used to estimate operational criteria emissions for the proposed 2030 General Plan. The URBEMIS2007 model was used to estimate operational criteria pollutant emissions. The URBEMIS model uses default trips lengths. However, using these default trip lengths often overestimates total vehicle miles traveled (VMT). Consequently, for this project, the default trip lengths were adjusted so that URBEMIS' estimate of 2030 General Plan VMT matches the VMT estimated by the traffic study prepared for the 2030 General Plan.

Criteria pollutant emissions were estimated for ROG,  $\text{NO}_x$ ,  $\text{PM}_{10}$ , and  $\text{PM}_{2.5}$  because these are the pollutants for which the SJVAPCD has established operational significance thresholds. CO and  $\text{SO}_x$  were also estimated because they represent the remaining criteria pollutants. However, the SJVAPCD has not established mass emission significance thresholds for either CO or  $\text{SO}_x$ .

### *Carbon Monoxide Methodology*

Intersection traffic volumes and levels of service (LOS) were not estimated for the proposed 2030 General Plan. Without that information, CO modeling cannot be conducted. Consequently, for this air quality section, CO impacts are discussed qualitatively.

### *Odor and Toxic Air Contaminants Methodology*

General Plans can potentially expose sensitive receptors to odors or TACs if residential land uses are located adjacent to potential sources of odors or TACs. Proposed land use designations were reviewed to identify the locations of any such conflicts.

### 7.2.3 ENVIRONMENTAL IMPACTS

The following discussion examines the potential impacts of implementing the proposed 2030 General Plan based on the impact threshold criteria described above.

*Impact AQ-1: Increase in construction emissions associated with General Plan buildout.*

Buildout of the 2030 General Plan would generate short-term or temporary air emissions during construction of both urban and rural uses, and during the construction of infrastructure necessary to serve these uses. The extensive regulation of air emissions from construction sources, combined with policies contained within the 2030 General Plan, would make this potential impact less than significant.

Buildout of the 2030 General Plan would generate exhaust emissions from on- and off-road construction vehicles. Construction equipment operating on unpaved areas would also generate fugitive dust. These emissions would result from construction activities occurring during buildout of the 2030 General Plan.

On-road and off-road exhaust emissions associated with construction activities are regulated by the ARB. ARB is responsible for developing statewide programs and strategies to reduce the emission of smog-forming pollutants, particulate matter, and toxics emitted by on and off-road mobile sources. ARB has also developed a diesel exhaust risk reduction program. Compared to a year 2000 baseline, ARB's diesel risk reduction program is designed to reduce diesel equipment exhaust emissions by 85 percent by the year 2020 (ARB 2010b). This is important because the majority of construction emissions are generated by diesel-powered equipment.

Fugitive dust emissions generated by construction activities are regulated by the SJVAPCD. Construction activities associated with buildout of the 2030 General Plan must comply with all applicable SJVAPCD rules and regulations, including SJVAPCD's Regulation VIII and Rule 9510. Regulation VIII consists of several individual rules that require implementation of best available mitigation measures to limit (i.e., manmade) anthropogenic dust emissions. These individual rules include:

- Rule 8021 Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities,
- Rule 8031 Bulk Materials,
- Rule 8041 Carryout and Trackout,
- Rule 8051 Open Areas,
- Rule 8061 Paved and Unpaved Roads,
- Rule 8071 Unpaved and Vehicle/Equipment Traffic Areas, and
- Rule 8081 Agricultural Sources.

Rule 9510 (Indirect Source Review) applies to indirect sources of emissions that include land development and transportation projects. Rule 9510 applies to medium and large projects<sup>1</sup>, and requires that project construction emissions of NO<sub>x</sub> be reduced by 20 percent from uncontrolled levels, and that PM<sub>10</sub> emissions be reduced by 45 percent from uncontrolled levels. These emission reductions can be achieved by implementation of mitigation measures and/or payment of an offset mitigation fee to the SJVAPCD.

The San Joaquin Valley Air Basin has been determined by ARB and EPA to be in attainment of federal PM<sub>10</sub> standards. Regulation VIII (and its subsidiary rules) and Rule 9510 have been accepted by ARB and EPA to maintain attainment of PM<sub>10</sub> standards in the Air Basin. (See discussion of the District's accepted 2007 PM<sub>10</sub> Maintenance Plan above.) In developing the 2007 Maintenance Plan, the SJVAPCD evaluated the potential PM<sub>10</sub> emissions that could occur under all sources within the Air Basin, including construction that would occur with implementation of the Merced County 2000 General Plan, and developed rules and procedures to reduce future emissions sufficiently to maintain the existing attainment status. Since the urban development that would occur under the proposed 2030 General Plan would be the same as that that would occur under the 2000 General Plan, requiring future development projects to be consistent with the requirements of SJVAPCD Regulation VIII, its associated rules, and Rule 9510 would result in maintaining the existing attainment status of the Air Basin. Even though a large development project could exceed the District's emissions thresholds, emissions averaged over all construction projects within Merced County would result in emissions that would maintain the Air Basin's attainment status, and thus, aggregate emissions from implementation of the 2030 General Plan from this source would not be significant.

Similarly, according to emissions inventory data from ARB for 2008, construction and demolition activities accounted for approximately two percent of daily PM<sub>10</sub> emissions within Merced County (30.6 tons/day total; 0.61 tons/day from construction) (ARB 2012). Because of the relatively small contribution of all construction activities within the county to total PM<sub>10</sub> emissions, even a large construction project would be unlikely to meaningfully affect total emissions within the county on a daily or annual basis. As an example, the Villages at San Luis Community Plan EIR certified by Merced County found that construction emissions of PM<sub>10</sub> from that project (3,700-acre development on agricultural and grazing land in western Merced County) would be less than significant after implementation of Regulation VIII and its subsidiary rules together with additional mitigation measures identified in that EIR. (Merced County 2007)

In addition, the proposed 2030 General Plan includes policies designed to reduce dust emissions (see Table 7-2). Policy AQ-6.1: PM Emissions from Construction supports the SJVAPCD's efforts to reduce particulate matter emissions from construction, grading, excavation, and demolition to the maximum extent feasible.

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<sup>1</sup> Any land use development project is subject to Rule 9510 if it equals or exceeds: 50 residential units, 2,000 square feet of commercial space, 25,000 square feet of light industrial, 100,000 square feet of heavy industrial, 20,000 square feet of medical space, 39,000 square feet of general office space, 9,000 square feet of educational space, 10,000 square feet of government space, 20,000 square feet of recreational space, or 9,000 square feet of space not identified above.

| <b>Table 7-2 Merced County 2030 General Plan Goals and Policies Relating to Construction Dust</b> |  |  |
|---|--|--|
| <b>Goal or Policy</b>   | <b>Goal or Policy Text</b>   | <b>How the Goal or Policy Avoids or Reduces Impact</b>   |
| <b>Air Quality Element</b>  |  |  |
| <b>Goal AQ-2</b>  | Accurately and fairly mitigate local and regional air quality impacts of projects through the CEQA process.  | Requires that all potential emissions from projects, including those from construction activities, be quantified, and that mitigation measures necessary to meet standards be implemented.             |
| <b>Policy AQ-2.7:</b><br>Air District Best Performance Standards                                  | Require the County to use the Best Performance Standards adopted by SJVAPCD during the development review and decision-making process to ensure new projects meet the targets set by the district.     | Requires the County to use SJVAPCD mitigation requirements and standards for new development projects.   |
| <b>Goal AQ-6</b>  | Improve air quality in Merced County by reducing emissions of PM <sub>10</sub> , PM <sub>2.5</sub> , and other particulates from mobile and non-mobile sources   | States County's goal to reduce emissions of fugitive dust, thereby improving air quality, public health and scenic quality.  |
| <b>Policy AQ-6.1:</b><br>PM <sub>10</sub> Emissions from Construction                             | Support the SJVAPCD's efforts to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible and consistent with State and Federal regulations. | Would reduce fugitive dust emissions during construction operations by vigorous enforcement of existing regional, state, and federal regulations, and through the County's development review process. |

*Source: Merced County, 2011; Planning Partners, 2012.*

Compliance with the Merced County 2030 General Plan policies cited in Table 7-2, combined with ARB's construction equipment exhaust standards, SJVAPCD's Regulation VIII fugitive dust rules, and SJVAPCD's Rule 9510, would ensure that short-term construction emissions generated by buildout of the 2030 General Plan would be minimized to the maximum extent feasible, and that the air quality attainment status of the Air Basin be maintained. These measures would ensure substantial reductions in both construction dust and exhaust emissions, and would result in the District continuing to meet federal air quality standards for PM<sub>10</sub>. Consequently, existing regulations, in combination with the 2030 General Plan policies to reduce dust emissions, would ensure that construction emissions are reduced to a less-than-significant level.

**Significance of Impact:** Less than significant.

**Mitigation Measure:** None required.

**Impact AQ-2: Increase in operational emissions of ROG, NO<sub>x</sub>, CO, and SO<sub>x</sub> associated with General Plan buildout.**

Buildout of the Merced County General Plan would generate long-term operational emissions of ROG, NO<sub>x</sub>, CO, and SO<sub>x</sub> from on-road vehicles, agricultural sources, and area sources. Due to existing and expected improvements in emission control technology, these emissions would be less than significant.

Emissions for the years 2010 and 2030 (the General Plan horizon year) were estimated using the methodology described in Section 7.2.2. The detailed modeling results are available in Appendix D, *Air Quality Technical Appendix*. Table 7-3 shows operational emissions associated with existing 2010 conditions, while Table 7-4 shows operational emissions for 2030 General Plan buildout. Table 7-5 shows the net increase in emissions for 2030 General Plan buildout as compared to existing conditions. 2030 General Plan buildout would result in lower ROG, NO<sub>x</sub>, and CO emissions as compared to 2010. This is primarily because decreases in on-road vehicle emissions between 2010 and 2030 would outweigh increases from area sources. On-road vehicle emissions of ROG, NO<sub>x</sub>, and CO decrease during this period as a result of improvements to motor vehicle exhaust controls mandated by ARB. This results in a net decrease in average vehicle emissions that outweighs the increase in vehicle miles traveled (VMT) between 2010 and 2030. Although there is a net increase in SO<sub>x</sub> emissions, the SJVAPCD has not established a significance threshold for this pollutant, primarily because the SJVAB is in attainment for SO<sub>x</sub>.

**Table 7-3 Existing General Plan Criteria Pollutant Emissions (tons per year)**

| Existing Conditions (2010) | ROG     | NO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> | CO       | SO <sub>x</sub> |
|----------------------------|---------|-----------------|------------------|-------------------|----------|-----------------|
| On-Road Vehicle Travel     | 1,034.8 | 2,356.2         | 743.8            | 197.6             | 12,516.5 | 8.5             |
| Area Source Emissions      | 489.2   | 113.4           | 327.1            | 314.9             | 2,145.5  | 6.5             |
| Agricultural Emissions     | 270.7   | 1,588.3         | 95.4             | 95.4              | 1,764.5  | 1.7             |
| Totals                     | 1,794.6 | 4,057.9         | 1,166.3          | 607.8             | 16,426.5 | 16.8            |

Note: Agricultural sources include exhaust emissions from agricultural equipment, and fugitive dust from operation of that equipment over exposed soils. Area sources include natural gas and wood combustion used for space and water heating, gasoline combustion used in landscape maintenance equipment, and evaporative emissions from consumer products. Detailed emission estimates included in Appendix D, *Air Quality Technical Appendix*.

Source: URS, 2012.

**Table 7-4 General Plan Buildout Criteria Pollutant Emissions (unmitigated, tons per year)**

| General Plan Buildout (2030) | ROG     | NO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> | CO       | SO <sub>x</sub> |
|------------------------------|---------|-----------------|------------------|-------------------|----------|-----------------|
| On-Road Vehicle Travel       | 635.6   | 847.7           | 1,252.9          | 280.8             | 6,703.7  | 15.1            |
| Area Source Emissions        | 961.6   | 244.1           | 626.9            | 603.4             | 4,132.4  | 12.5            |
| Agricultural Emissions       | 67.9    | 340.6           | 11.0             | 11.0              | 1,425.0  | 1.7             |
| Totals (unmitigated)         | 1,665.1 | 1,432.3         | 1,890.8          | 895.3             | 12,261.0 | 29.3            |

Note: Agricultural sources include exhaust emissions from agricultural equipment, and fugitive dust from operation of that equipment over exposed soils. Area sources include natural gas and wood combustion used for space and water heating, gasoline combustion used in landscape maintenance equipment, and evaporative emissions from consumer products. Detailed emission estimates included in Appendix D, *Air Quality Technical Appendix*.

Source: URS, 2012.

**Table 7-5 Net Increase in Criteria Pollutant Emissions from 2010 to 2030 (unmitigated, tons per year)**

| Scenario                                  | ROG     | NO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> | CO        | SO <sub>x</sub> |
|---|---------|-----------------|------------------|-------------------|-----------|-----------------|
| Existing Conditions (2010)                | 1,794.6 | 4,057.9         | 1,166.3          | 607.8             | 16,426.5  | 16.8            |
| General Plan Buildout (unmitigated, 2030) | 1,665.1 | 1,432.3         | 1,890.8          | 895.3             | 12,261.0  | 29.3            |
| Net Increase                              | (129.5) | (2,625.6)       | 724.6            | 287.5             | (4,165.5) | 12.5            |
| SJVAPCD Significance Threshold            | 10      | 10              | 15               | 15                | N/A       | N/A             |
| Exceed Threshold?                         | No      | No              | Yes              | Yes               | No        | No              |

Source: URS, 2012.

Since air quality protection and improvement is a major focus of the 2030 General Plan, the Air Quality Element includes goals and policies that would reduce air emissions from on-road vehicles, agricultural sources, and area sources. Table 7-6 includes goals and policies from the 2030 General Plan that communicate the County's intention to protect and improve air resources within the county.

**Table 7-6 Merced County 2030 General Plan Goals and Policies That Would Result in Decreased Air Emissions**

| Goal or Policy                                       | Goal or Policy Text  | How the Goal or Policy Avoids or Reduces Impact   |
|--|--|---|
| <b>Air Quality Element</b>                           |  |   |
| <b>Goal AQ-2</b>                                     | Mitigate local and regional significant air quality impacts of projects through the CEQA process.  | States the County's goal to reduce emissions by requiring evaluation and mitigation of air emissions during project review, and compliance with the air regulations of regional, state, and federal agencies. |
| <b>Policy AQ-2.1:</b><br>Air Quality Plan Compliance | Require all development projects to comply with applicable regional air quality plans and policies.  | Would reduce emissions by requiring compliance with the air regulations of regional, state, and federal agencies.   |
| <b>Policy AQ-2.2:</b><br>Development Review Process  | Use the development review process to achieve measurable reductions in greenhouse gas emissions.   | Would reduce emissions by requiring evaluation and mitigation of air emissions during project review.   |
| <b>Policy AQ-2.3:</b><br>Cumulative Impacts          | Encourage the reduction of cumulative air quality impacts produced by projects that are not significant by themselves, but result in cumulatively significant impacts in combination with other development. | Would reduce emissions by requiring evaluation and mitigation of air emissions during project review.   |
| <b>Policy AQ-2.4:</b><br>Mitigation                  | Require that local and regional air quality impacts identified during CEQA review for projects reviewed and approved by the County are consistently and fairly mitigated.                                    | Would reduce emissions by requiring evaluation and mitigation of air emissions during project review.   |

**Table 7-6 Merced County 2030 General Plan Goals and Policies That Would Result in Decreased Air Emissions**

| <b>Goal or Policy</b>  | <b>Goal or Policy Text</b>  | <b>How the Goal or Policy Avoids or Reduces Impact</b>   |
|--|---|--|
| <b>Policy AQ-2.5:</b><br>Innovative Mitigation Measures          | Encourage innovative mitigation measures and project redesign to reduce air quality impacts by coordinating with the San Joaquin Valley Air Pollution Control District, project applicants, and other interested parties.   | Would permit alternative methods of mitigating emissions and furthering air quality goals.   |
| <b>Policy AQ-2.7:</b><br>Air District Best Performance Standards | Require the County to use the Best Performance Standards adopted by SJVAPCD during the development review and decision-making process to ensure new projects meet the targets set by the district.  | Would reduce emissions by requiring compliance with the air regulations of regional, state, and federal agencies.                              |
| <b>Goal AQ-3</b>   | Improve air quality through improved public facilities and operations and to serve as a model for the private sector.   | States the County's goal to act as a model for private employer efforts to reduce air emissions.   |
| <b>Policy AQ-3.1:</b><br>Automotive Trip Reduction.              | Prepare and implement an automotive trip reduction plan for County employees.   | Would reduce emissions by reducing vehicle trips and VMT.  |
| <b>Policy AQ-3.2:</b><br>Clean Fleet Vehicles                    | Require vehicle replacement practices that prioritize the replacement of older higher-emission vehicles and the purchasing of the lowest emission technology vehicles, consistent with cost-effective management of the program.                                  | Would reduce emissions by replacing older, polluting vehicles in the County fleet with new reduced-emissions vehicles.                         |
| <b>Policy AQ-3.3:</b><br>Teleconferencing                        | Use teleconferencing in lieu of employee travel to conferences and meetings when feasible.  | Would reduce emissions by reducing vehicle trips and VMT.  |
| <b>Policy AQ-3.4:</b><br>Infrastructure for Teleconferencing     | Develop state-of-the-art communication infrastructure to support telecommuting and secure software programs to allow telecommuting by County employees.   | Would reduce emissions by reducing vehicle trips and VMT.  |
| <b>Goal AQ-4</b>   | Reduce traffic congestion and vehicle trips through more efficient infrastructure and support for trip reduction programs.  | States County's goal to improve air quality by reducing vehicle trips and VMT, and by emphasizing the efficiency of the transportation system. |
| <b>Policy AQ-4.1:</b><br>Decrease Vehicle Miles Traveled         | Require diverse, higher-density land uses (e.g., mixed use and infill development) to decrease VMT.   | Would reduce emissions by reducing vehicle trips and VMT.  |
| <b>Policy AQ-4.2:</b><br>Increasing Road Capacity                | Increase the efficiency of the existing road network prior to constructing additional capacity. These measures could include: modifying intersections using turn restrictions or channelization, where feasible; and redirecting truck traffic during peak hours. | Would reduce emissions by improving traffic flow, decreasing wait times, and improving traffic speeds.   |

**Table 7-6 Merced County 2030 General Plan Goals and Policies That Would Result in Decreased Air Emissions**

| <b>Goal or Policy</b>   | <b>Goal or Policy Text</b>   | <b>How the Goal or Policy Avoids or Reduces Impact</b>   |
|---|--|--|
| <b>Policy AQ- 4.3:</b><br>Public Transit Use Incentives               | Prepare incentives and programs to encourage use of public transit and decrease vehicle miles traveled.  | Would reduce emissions by reducing vehicle trips and VMT.  |
| <b>Policy AQ-4.4:</b><br>Transportation Alternatives                  | Require employers and developers to provide employees and residents with attractive, affordable transportation alternatives, such as transit stops, van pool pick-up and drop-off locations, and biking paths/storage.   | Would reduce emissions by reducing vehicle trips and VMT.  |
| <b>Policy AQ-4.5:</b><br>Public Education and Awareness               | Support programs that educate the public regarding the impact of individual transportation, lifestyle, and land use decisions on air quality.  | Would reduce emissions by reducing vehicle trips and VMT.  |
| <b>Policy AQ-4.6:</b><br>Non-Motorized Transportation                 | Encourage non-motorized transportation corridors within and between communities.   | Would reduce emissions by reducing vehicle trips and VMT.  |
| <b>Policy AQ-4.7:</b><br>Planning Integration                         | Require land use, transportation, and air quality planning to be integrated for the most efficient use of resources and a healthier environment.   | Would reduce emissions by reducing vehicle trips and VMT.  |
| <b>Goal AQ-6</b>  | Improve air quality in Merced County by reducing emissions of PM <sub>10</sub> , PM <sub>2.5</sub> , and other particulates from mobile and non-mobile sources   | States County's goal to reduce emissions of fugitive dust, thereby improving air quality, public health and scenic quality.  |
| <b>Policy AQ-6.1:</b><br>Particulate Emissions from Construction      | Support the SJVAPCD's efforts to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible and consistent with State and Federal regulations.   | Would reduce fugitive dust emissions during construction operations by vigorous enforcement of existing regional, state, and federal regulations, and through the County's development review process. |
| <b>Policy AQ-6.2:</b><br>PM <sub>10</sub> Emissions from County Roads | Require PM <sub>10</sub> emission reductions on County-maintained roads to the maximum extent feasible and consistent with State and Federal regulations.  | Would reduce fugitive dust emissions originating from County-maintained roads by compliance with existing regional, state, and federal regulations.  |
| <b>Policy AQ-6.3:</b><br>Paving Materials                             | 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.   | Would reduce fugitive dust emissions by requiring appropriate paving materials.  |
| <b>Policy AQ-6.4:</b><br>Agricultural Best Management Practices       | Encourage agricultural operations to incorporate Best Management Practices, such as paving roads, screening cropland with windbreaks, limiting tilling and grading on high-wind days, and changing harvesting equipment, to reduce PM <sub>10</sub> emissions consistent with State and Federal regulations. | Would reduce fugitive dust emissions originating from agricultural operations by encouraging compliance with existing regional, state, and federal regulations and BMPs.                               |



**Table 7-6 Merced County 2030 General Plan Goals and Policies That Would Result in Decreased Air Emissions**

| Goal or Policy  | Goal or Policy Text   | How the Goal or Policy Avoids or Reduces Impact  |
|---|---|--|
| <b>Policy AQ-6.5:</b><br>Industrial Best Management Practices | Require industrial facilities to incorporate economically feasible Best Management Practices and control technology to reduce PM <sub>10</sub> emissions consistent with State and Federal regulations. | Would reduce fugitive dust emissions originating from industrial operations by encouraging compliance with existing regional, state, and federal regulations and BMPs. |

*Source: Merced County, 2011; Planning Partners, 2012.*

Improvements in motor vehicle exhaust controls would result in a net decrease in Merced County's emissions of ROG, NO<sub>x</sub>, and CO between 2010 and 2030 (and only a minor increase in SO<sub>x</sub>). Implementation of the policies cited in Table 7-3 would further reduce emissions of ROG, NO<sub>x</sub>, CO, and SO<sub>x</sub> beyond reductions achieved from improvements in motor vehicle exhaust controls.

Because emissions with implementation of the 2030 General Plan would be less than existing emissions for ROG, NO<sub>x</sub>, and CO, and the Air Basin is in attainment for SO<sub>x</sub>, this would be a less-than-significant impact.

**Significance of Impact:** Less than significant.

**Mitigation Measures:** None required.

***Impact AQ-3: Increase in operational emissions of PM<sub>10</sub> and PM<sub>2.5</sub> associated with General Plan buildout.***

As compared to 2010 levels, buildout of the 2030 General Plan would generate long-term operational emission increases of PM<sub>10</sub> and PM<sub>2.5</sub> from on-road vehicles, agricultural sources, and area sources that exceed the SJVAPCD's significance thresholds. This would be a potentially significant impact.

As Table 7-5 shows, implementation of the proposed 2030 General Plan would result in a net increase in PM<sub>10</sub> and PM<sub>2.5</sub> in 2030 as compared to existing conditions (2010). This net increase would substantially exceed the SJVAPCD's 15 tons per year threshold for PM<sub>10</sub> and PM<sub>2.5</sub>. The emission increase is primarily due to the increase in VMT and area source emissions. Agricultural emissions of PM<sub>10</sub> and PM<sub>2.5</sub> are projected to decrease. The increase in area source-related PM<sub>10</sub>/PM<sub>2.5</sub> is primarily due to emissions from wood stoves.

To minimize PM<sub>10</sub> and PM<sub>2.5</sub> emissions from wood stoves, the SJVAPCD has adopted Rule 4901, Wood Burning Fireplaces and Wood Burning Heaters. This measure prohibits the installation of wood stoves and heaters in residences when the residential density equals or exceeds two units per acre. Rule 4901 also requires that all new wood stoves meet EPA certified Phase II emission standards. Although Rule 4901 reduces emissions in urban areas, it has less effect in less densely developed rural areas.

The Merced County Air Quality Element includes several policies to reduce fugitive dust emissions from motor vehicles and unpaved roadways, and from agricultural and industrial operations (see Table 7-6). Implementation of the measures summarized in Table 7-6, along with the new air quality policies proposed for wood stoves, would reduce PM<sub>10</sub> and PM<sub>2.5</sub> emissions. Table 7-7 shows the mitigated 2030 PM<sub>10</sub> and PM<sub>2.5</sub> emissions, and Table 7-8 shows the net increase of PM<sub>10</sub> and PM<sub>2.5</sub> in 2030.

| <b>Table 7-7 General Plan Buildout PM<sub>10</sub> and PM<sub>2.5</sub> Emissions (mitigated, tons per year)</b> |                        |                         |
|--|------------------------|-------------------------|
| <b>General Plan Buildout (2030)</b>  | <b>PM<sub>10</sub></b> | <b>PM<sub>2.5</sub></b> |
| On-Road Vehicle Travel   | 1245.1                 | 279.1                   |
| Area Source Emissions  | 164.21                 | 158.07                  |
| Agricultural Emissions   | 11.0                   | 11.0                    |
| Totals (mitigated)   | 1,420.2                | 448.17                  |

Notes: Mitigated emission estimates assume 0.62% reduction in on-road vehicle miles traveled and associated PM<sub>10</sub> and PM<sub>2.5</sub> emissions (KD Anderson & Associates 2011). Mitigated area source emissions assume 50 percent decrease in wood stove emissions by 2030. This 50 percent reduction assumes no new wood stoves would be installed in new residences and a 50 percent reduction in wood stove emissions from existing residences.

Source: URS, 2012.

| <b>Table 7-8 Net Increase in PM<sub>10</sub> and PM<sub>2.5</sub> Emissions from 2010 to 2030 (mitigated, tons per year)</b> |                        |                         |
|--|------------------------|-------------------------|
| <b>Scenario</b>  | <b>PM<sub>10</sub></b> | <b>PM<sub>2.5</sub></b> |
| Existing Conditions (2010)   | 1,166.3                | 607.8                   |
| General Plan Buildout (mitigated, 2030)  | 1,420.2                | 448.17                  |
| Net Increase   | 253.9                  | -159.63                 |
| SJVAPCD Significance Threshold   | 15                     | 15                      |
| Exceed Threshold?  | Yes                    | No                      |

Source: URS, 2012.

While PM<sub>2.5</sub> emissions would not exceed SJVAPCD significance criteria and would be considered less than significant, because the increase in emissions of PM<sub>10</sub> would exceed SJVAPCD significance criteria, this would be a potentially significant impact.

**Significance of Impact:** Potentially significant.

#### **Mitigation Measure AQ-3a:**

Amend Policy AQ-2.2: Development Review Process, as follows:

Use the development review process to achieve measurable reductions in criteria pollutants, toxic air contaminants, and greenhouse gas emissions.

#### **Mitigation Measure AQ-3b:**

Add the following policy:

**Policy AQ-6.6: Prohibition on Wood Stoves**

Prohibit wood stoves and wood burning heaters in all newly constructed residences in unincorporated Merced County that have access to natural gas. Natural gas stoves have substantially lower PM<sub>10</sub> and PM<sub>2.5</sub> emissions as compared to wood stoves.

**Mitigation Measure AQ-3c:**

Add the following policy:

**Policy AQ-6.7: Stove Replacement**

Require owners of residences with existing wood stoves, or wood burning heaters or fireplaces to remove such wood appliances, upgrade existing stoves to meet EPA certified Phase II emission standards, or replace existing wood stoves with natural gas fired stoves upon sale, or major reconstruction of the residence that exceeds 75 percent of the assessed value of the structure prior to reconstruction, if the residence has access to natural gas. Merced County shall establish a program to collect and destroy any existing wood stoves that have been removed by residents.

**Environmental Effects of Measures:** Because these mitigation measures would result in the additional reduction of air emissions arising from the development of urban uses and infrastructure identified in the 2030 General Plan, there would be no additional impacts beyond those identified for such development in Chapters 5 through 22 of this Draft PEIR.

**Level of Significance after Mitigation:** Significant and unavoidable.

The existing general plan policies described in Table 7-6, combined with amended policy AQ-2.2 and proposed policies AQ-6.6 and AQ-6.7, would further reduce PM<sub>2.5</sub> emissions. Mitigation Measure AQ-3b goes one step further than SJVAPCD Rule 4901 by preventing installation of any wood burning device if a new residence has access to natural gas. Mitigation Measure AQ-3c would require replacement of existing wood stoves upon home sale with either an EPA-certified wood stove or with a natural gas stove (also not required by Rule 4901). Even with implementation of these measures however, the net increase in 2030 PM<sub>10</sub> emissions as shown in Tables 7-7 and 7-8 would still exceed the SJVAPCD's PM<sub>10</sub> significance threshold of 15 tons per year (primarily from increased PM<sub>10</sub> emissions from increased travel by on-road vehicles whose control measures are outside of the jurisdiction of Merced County). Therefore, there would be a significant and unavoidable PM<sub>10</sub> impact.

***Impact AQ-4: Increase in Carbon Monoxide concentrations at congested intersections.***

Buildout of the 2030 General Plan, despite increasing VMT and area source activity level, would not increase overall CO emissions. Consequently, CO impacts would be less than significant.

Cumulative buildout of the 2030 General Plan would increase VMT by 102 percent by 2030. At the same time, average CO emissions per vehicle are projected to decrease 85 percent by 2030 (ARB 2011b). The decrease in CO emissions would outweigh the increase in VMT, resulting in a net reduction in countywide CO emissions from vehicles. Even though total CO emissions would decrease countywide, there is the potential that increases in local trip generation could increase CO

concentrations at congested intersections. However, buildout of the 2030 General Plan is not expected to result in violations of the state or federal CO standards because of the general downward trend in CO emissions from vehicles, and because no CO violations have been recorded in Merced County in over 20 years (ARB 2011c). Because implementation of the 2030 General Plan would not result in violations of CO standards, this impact would be less than significant.

**Significance of Impact:** Less than significant.

**Mitigation Measure:** None required.

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***Impact AQ-5: Increase in health risks associated with locating sensitive receptors near high volume roads.***

The 2030 General Plan has the potential to expose sensitive receptors to substantial concentrations of toxic air contaminants (TAC) because it allows residences to be built near high volume roads. This would be a potentially significant impact because of the potential health risks to residents from TAC exposure.

As set forth above, ARB research has substantiated that exposure to high levels of TACs poses health risks to sensitive populations. Air toxics sources include: high traffic freeways and roads, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and large gas dispensing facilities. Air toxic sources generate high levels of diesel particulate matter emissions and other cancer causing chemicals. ARB recommends that local jurisdictions adopt land use policies so that sensitive land uses are located a minimum of 500 to 1,000 feet from sources of TACs. Where this minimum separation is not achievable, ARB recommends that local jurisdictions perform health risk assessments to determine the cancer risk potential of individual land use proposals locating an air toxics source (e.g., high volume freeway) close to a sensitive land use (e.g., residential uses) (ARB 2005).

ARB has developed guidance recommending that sensitive land uses such as residences, daycare centers, and schools be located 500 feet or more from any roads with traffic volumes exceeding 50,000 vehicles/day (ARB 2005). In Merced County, Interstate 5 and State Route 99 are the two roads with average daily traffic near or exceeding these volumes (California Department of Transportation 2011).

Several areas within unincorporated Merced County were identified as having proposed residential land use designations adjacent to these roads. They include:

- Atwater City Planning Area
- Delhi Urban Community
- Fox Hills Urban Community
- Franklin-Beachwood Urban Community
- Santa Nella Urban Community
- Delhi Rural Residential Center
- Franklin-Beachwood Rural Residential Center
- McSwain Rural Residential Center

The Merced County Air Quality Element includes several policies designed to limit human exposure from sources of hazardous air emissions as indicated in Table 7-9.

| <b>Table 7-9 Merced County 2030 General Plan Goals and Policies Relating to Hazardous Air Emissions and Human Exposure</b> |  |  |
|--|--|--|
| <b>Goal or Policy</b>  | <b>Goal or Policy Text</b>   | <b>How the Goal or Policy Avoids or Reduces Impact</b>   |
| <b>Air Quality Element</b>   |  |  |
| <b>Goal AQ-5</b>   | County residents are protected from toxic air pollutants and noxious odors from industrial, manufacturing, and processing facilities, and agricultural operations.   | State County's goal to protect residents from TACs and odors.  |
| <b>Policy AQ-5.1:</b><br>Residential Buffers   | Require effective buffers between residential land uses and non-residential land uses that generate hazardous air emissions such as highways, trucking centers, gasoline dispensing facilities, and dry cleaners.  | Ensures adequate buffer zones between sources of toxic air contaminants/odors and residential land uses. |
| <b>Policy AQ-5.2:</b><br>New Point Sources   | Require new air pollution point sources such as, but not limited to, industrial, manufacturing, and processing facilities to be located an adequate distance from residential areas and other sensitive receptors. | Ensures adequate buffer zones between sources of toxic air contaminants/odors and residential land uses. |

*Source: Merced County, 2011; Planning Partners, 2012.*

The foregoing policies would act to reduce the potential that residences and other sensitive uses could be sited in areas affected by TACs. However, the land uses designated by the 2030 General Plan indicate that sensitive uses could be constructed adjacent to high volume roadways within the county. Because the implementation of the proposed 2030 General Plan could result in the construction of residences and other sensitive land uses near high volume roadways that would be a source of hazardous air pollutants, this would be a potentially significant impact.

**Significance of Impact:** Potentially significant.

**Mitigation Measure AQ-5a:**

Implement Mitigation Measure AQ-3a: Amend Policy AQ-2.2: Development Review Process.

**Mitigation Measure AQ-5b:**

Amend Policy AQ-5.1: Residential Buffers, as follows:

Require effective buffers between residential and other sensitive land uses, and non-residential land uses that generate hazardous air emissions such as highways (e.g., I-5 and SR-99), trucking centers, gasoline dispensing facilities, and dry cleaners. Effective buffers shall be determined by requiring consultation with the SJVAPCD for any project that may have a health risk impact, including those projects that would otherwise appear to be exempt from CEQA requirements.

**Environmental Effects of Measures:** Because these mitigation measures would result in the reduction of exposure to hazardous air emissions arising from the development of urban uses and infrastructure identified in the 2030 General Plan, there would be no additional impacts beyond those identified for such development in Chapters 5 through 22 of this Draft PEIR.

**Level of Impact with Mitigation:** Less than significant.

By requiring residential buffers, prohibiting sensitive uses from locating near generators of TACs, and requiring that development review evaluate and mitigate any adverse effects, the combination of amended General Plan Policy AQ-5.1 and amended Policy AQ-2.2 would reduce health risks to sensitive receptors that could potentially be located near high volume roads. This would be a less-than-significant impact.

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*Impact AQ-6: Increase in health risks associated with locating sensitive receptors near sources of odors and/or toxic air contaminants emitted by industrial, commercial, and agricultural land uses.*

The 2030 General Plan has the potential to expose sensitive receptors to substantial concentrations of TACs and odors because it could allow such receptors to be located in close proximity to sources of TACs and odors. Because of the proposed 2030 General Plan policies and existing programs that would avoid exposure to odors and TACs, this would be a less-than-significant impact.

ARB has developed guidance recommending that sensitive land uses such as residences, daycare centers, and schools be separated from industrial and heavy commercial land uses (ARB 2005). Several areas in Merced County have residential land use designations that are adjacent to land uses designated for industrial and/or commercial development. These include:

- Atwater City Planning Area
- Merced City Planning Area
- Delhi Urban Community
- Hilmar Urban Community
- Planada Urban Community
- Ballico Rural Center
- Dos Palos Y Rural Center
- Volta Rural Center
- Dos Palos City Planning Area
- Castle Urban Community
- Franklin-Beachwood Urban Community
- Le Grand Urban Community
- Winton Urban Community
- Cressey Rural Center
- Snelling Rural Center
- Franklin-Beachwood Rural Residential Center.

Major sources of odors in unincorporated Merced County include confined animal facilities (feedlots, dairies, poultry ranches) and agricultural processing and packing plants. Odors may arise both from operations of these facilities, and the application of manure and post-processing vegetable and fruit residues to agricultural fields. Agricultural Processing plants where the County has received odor complaints or where operations are similar to those facilities where the County has received complaints, include:

**Western Merced County**

- Morning Star Packing (Volta, tomatoes)
- Liberty Packing (Volta, tomatoes)
- Ingomar Packing (north of Volta on Ingomar Grade, tomatoes)

**Eastern Merced County**

- Hilmar Cheese (SR 165, north of Hilmar, cheese)
- Dole Foods (Bellevue Road, west of Atwater)

Confined animal facilities are located throughout the county, and may be sources of odors and TACs in rural areas. The locations and situations cited above present potential land use conflicts that could expose residents to odors, TACs, and associated health risks.

No federal or state laws exist for odor emissions; regulation is achieved through County ordinances, and enforcement is based upon complaints. For confined animal facilities, Merced County uses a setback approach to odor nuisance control, requiring setbacks between animal confinement facilities and other uses of 0.5 mile for urban areas and uses, and 1,000 feet for isolated rural residences. The SJVAPCD *Guide for Assessing Air Quality Impacts* (SJVAPCD 2002) concludes that odor-producing facilities or activities located within one mile of sensitive receptors (i.e., hospitals, schools, and residential areas) are candidates for a more detailed investigation due to a greater possibility of nuisance. However, SJVAPCD's Nuisance Rule 4102 specifically exempts dairies from nuisance requirements, and thus the SJVAPCD has interpreted that more detailed odor studies do not apply to dairies. Additionally, the Merced County Planning Department has established designated windsheds, and the County zoning code requires permits from the Planning Department based on the location of a confined animal facility with respect to off-site dwellings. An administrative permit is required in areas where there are no more than five off-site dwellings within the project windshed, and a Conditional Use Permit (CUP) is required in areas where there are more than five off-site dwellings within the project windshed, or where the facility is located within 0.5-mile of an urban boundary or sensitive use area.

Goal AQ-5 of the 2030 General Plan Air Quality is designed to protect county residents from TACs and noxious odors generated by agricultural operations, and industrial, manufacturing, and processing facilities. Air Quality Element Policy AQ-5.1 (see Table 7-9) is designed to ensure effective buffers between residential land uses and non-residential land uses that generate hazardous air emissions, such as highways, trucking centers, gasoline dispensing facilities, and dry cleaners. In addition, Air Quality Element Policy AQ-5.2 requires new point sources of air pollution to be located an adequate distance from residential areas and other sensitive receptors. These two policies are designed to protect residences and sensitive populations from exposure to excessive levels of pollutants. These policies would reduce potential health and odor impacts associated with sources of such emissions.

Additionally, Merced County has developed several policies designed to maintain compatibility between agricultural land uses and urban areas (see Table 7-10).

| <b>Table 7-10 Merced County 2030 General Plan Goals and Policies Relating to Agricultural Buffer Zones</b> |  |   |
|--|--|---|
| <b>Goal or Policy</b>  | <b>Goal or Policy Text</b>   | <b>How the Goal or Policy Avoids or Reduces Impact</b>                                    |
| <b>Agricultural and Urban Area Compatibility</b>   |  |   |
| <b>Goal AG-3</b>   | Minimize conflicts between productive agricultural areas and urban land uses, and discourage the parcelization and conversion of large agricultural holdings into rural residential parcels or urban uses.   | Ensure adequate buffer zones between agricultural sources and non-agricultural land uses. |
| <b>Policy AG-3.2:</b><br>Agricultural Buffer   | Requires buffers between proposed non-agricultural uses and adjacent productive agricultural operations to protect farms, dairies, and agriculturally-related production facilities from conflicts with non-agricultural uses, specifically residential development.   | Ensure adequate buffer zones between agricultural sources and non-agricultural land uses. |
| <b>Policy AG-3.3:</b><br>Agricultural Buffer Standards   | Establish agricultural buffer standards based on type of agricultural operation to be applied to residential development proposals adjacent to productive agricultural land and agricultural-related facilities.   | Ensure adequate buffer zones between agricultural sources and residential land uses.      |
| <b>Policy AG-3.4:</b><br>Residential Buffers from Agriculture  | Require a minimum 200-foot buffer between new residential development and existing agricultural operations, and establish design/maintenance guidelines for developers and property owners.  | Ensure adequate buffer zones between agricultural sources and residential land uses.      |
| <b>Policy AG-3.9:</b><br>New Confined Animal Facility Location Requirement                                 | Require new or expanded confined animal facilities to be located, at a minimum:<br>a) One-half miles from any Rural Center or Urban Community boundary; residentially-designated or zoned property; sensitive uses such as schools, hospitals, jails, federal wildlife areas, and public parks; or concentrations of five or more off-site residences. This does not include areas for municipal uses such as wastewater treatment facilities, airports, or solid waste recycling or disposal facilities located outside of urban areas, and<br>b) One thousand feet from any off-site residence, unless there is written permission from the off-site property owner. | Ensure adequate buffer zones between agricultural sources and residential land uses.      |

*Source: Merced County, 2011; Planning Partners, 2012.*

The policies listed in Table 7-9, combined with those listed in Table 7-10, in concert with existing County regulations of odors from confined animal facilities would minimize TAC and odor impacts associated with buildout of the 2030 General Plan by requiring evaluation and mitigation of such effects, and by establishing appropriate buffer areas between sensitive uses and sources of odors and TACs. For these reasons, this would be a less-than-significant impact.

**Significance of Impact:** Less than significant.

**Mitigation Measure:** None required.