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**Guidance for  
Assessing and Mitigating  
Air Quality Impacts - 2012**

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## LIST OF ACRONYMS AND ABBREVIATIONS

|                   |                                                              |
|-------------------|--------------------------------------------------------------|
| ACM               | Asbestos Containing Material                                 |
| ADT               | Average Daily Trips                                          |
| APCD              | San Joaquin Valley Air Pollution Control District            |
| APS               | Auxiliary Power System                                       |
| ARB               | California Air Resources Board                               |
| ATCM              | Air Toxics Control Measure                                   |
| BACT              | Best Available Control Technology for Construction Equipment |
| CAAA              | 1990 Clean Air Act Amendments                                |
| CAAQS             | California Ambient Air Quality Standards                     |
| CAMP              | Construction Activity Management Plan                        |
| CAP               | Clean Air Plan for San Luis Obispo County                    |
| CAPCOA            | California Air Pollution Control officers Associations       |
| CCR               | California Code of Regulations                               |
| CEQA              | California Environmental Quality Act                         |
| CNG               | Compressed Natural Gas                                       |
| CO                | Carbon Monoxide                                              |
| CO <sub>2</sub>   | Carbon Dioxide                                               |
| DEIR              | Draft Environmental Impact Report                            |
| DOC               | Diesel Oxidation Catalyst                                    |
| DPM               | Diesel Particulate Matter                                    |
| EIR               | Environmental Impact Report                                  |
| EPA               | United States Environmental Protection Agency                |
| GAMAQI            | Guidance for Assessing and Mitigating Air Quality Impacts    |
| GHG               | Greenhouse Gases                                             |
| HRA               | Health Risk Assessment                                       |
| ISR               | Indirect Source Review                                       |
| ITE               | Institute of Transportation Engineers                        |
| LNG               | Liquid Natural Gas                                           |
| µ/m <sup>3</sup>  | Micrograms per Cubic Meter                                   |
| NAAQS             | National Ambient Air Quality Standards                       |
| NESHAP            | National Emission Standard for Hazardous Air Pollutants      |
| NO                | Nitrogen Oxide                                               |
| NOA               | Naturally Occurring Asbestos                                 |
| NOP               | Notice of Preparation                                        |
| NO <sub>x</sub>   | Oxides of Nitrogen                                           |
| PM                | Particulate Matter                                           |
| PM <sub>2.5</sub> | Particulate Matter (2.5µm and smaller)                       |
| PM <sub>10</sub>  | Particulate Matter (10µm in size and smaller)                |
| ROG               | Reactive Organic Gases                                       |
| SJVAPCD           | San Joaquin Valley Air Pollution Control District            |
| tpy               | Tons per Year                                                |
| TAC               | Toxic Air Contaminant                                        |
| Mm                | Micrometer [micron]                                          |
| VDECS             | Verified Diesel Emission Control Systems                     |
| VMT               | Vehicle Miles Traveled                                       |
| VOC               | Volatile Organic Compounds                                   |



## GLOSSARY

**Area Sources:** A collection of similar emission units within a geographic area (i.e., a County) that are small and numerous and may not have been inventoried as specific point, mobile, or biogenic sources. The California Air Resources Board (CARB) has grouped these individual sources with other like sources into area source categories. These source categories are grouped in such a way that they can be estimated collectively using one methodology.

**Area-Wide Sources:** Sources of pollution where the emissions are spread over a wide area, such as consumer products, fireplaces, road dust and farming operations. Area-wide sources do not include mobile sources or stationary sources.

**Climate Change:** Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gases (GHGs), particularly those generated from the human production and use of fossil fuels.

**Commenting Agency:** See "Trustee Agency".

**Criteria Pollutant:** The EPA has identified ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur oxides, and lead as criteria pollutants. The EPA calls these pollutants "criteria" air pollutants because it regulates them by developing human health-based and/or environmentally-based guidelines (criteria) for setting permissible levels.

**Cumulative Impacts:** Refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. (a) The individual effects may be changes resulting from a single project or a number of separate projects. (b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

**Discretionary Approval:** A governmental decision in which an agency can use its judgment in deciding whether and how to carry out or approve a project.

**Discretionary Project:** A project which requires the exercise of judgment or deliberation when the public agency or body decides to approve or disapprove a particular activity, as distinguished from situations where the public agency or body merely has to determine whether there has been conformity with applicable statutes, ordinances, or regulations.

**Diverted Linked Trips:** As defined by the Institute of Transportation Engineers (ITE) are trips attracted from the traffic volume on a roadway within the vicinity of the generator but require a diversion from that roadway to another roadway to gain access to the site.



**Effects:** Direct or primary environmental changes that are caused by the project and occur at the same time and place, and indirect or secondary environmental changes that are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable.

**Fugitive Dust:** Small particles which are entrained and suspended into the air by the wind or external disturbances. Fugitive dust typically originates over an area and not a specific point. Typical sources include unpaved or paved roads, construction sites, mining operations, disturbed soil and tilled agricultural areas.

**Hazardous Air Pollutants (HAPs):** HAPs are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects, or birth defects, or adverse environmental effects. The EPA, in the Clean Air Act lists 189 HAPs.

**Impacts:** See “Effects”.

**Lead Agency:** The public agency with the principal responsibility for carrying out or approving a project subject to CEQA.

**Ministerial Approval:** A governmental decision involving little or no personal judgment by the public official as to the wisdom or manner of carrying out the project. The public official merely applies the law to the facts as presented but uses no special discretion or judgment in reaching a decision.

**Mitigation:** Feasible alternatives or measures that would substantially lessen any significant effects that the project would have on the environment. Mitigation measures must be fully enforceable through permit conditions, agreements, or other legally binding instruments [CCR §15126.4(a)(2)]. Mitigation includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment;
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- Compensating for the impact by replacing or providing substitute resources or environments.

**Mobile Sources:** Sources of air pollution such as automobiles, motorcycles, trucks, off-road vehicles, boats, and airplanes. (See also stationary sources).

**Offsets:** Emission reductions recognized by the District in the form of Emission Reduction Credits that are used in accordance with the provisions of District Rule 2301 (Emission



Reduction Credit Banking), or other actual emission reductions that may be used to mitigate an emission increase. (See District Rule 2301)

**Ozone Precursors:** Gaseous compounds needed to form ozone by the process of photochemistry. Photochemical air pollution (primarily ozone) is produced by the atmospheric reaction of organic substances, such as reactive organic gases (ROG) and nitrogen dioxide (NO<sub>2</sub>) under the influence of sunlight.



During the summer, in areas with high emissions and high ozone concentrations, ozone concentrations are very dependent on the amount of solar radiation. Ozone levels typically peak in the late afternoon, at the end of the longest period of daily solar radiation. After the sun goes down, the chemical reaction between nitrous oxide and ozone begins to dominate and ozone usually decreases.



In some remote rural locations away from emission sources, ozone concentrations can remain high overnight because there are no nitrogen oxide (NO) sources to react with the existing ozone. Ozone precursors are typically considered to be the combination of ROG and NO<sub>x</sub>.

**Particulate Matter:** Small particles that become airborne and have the potential to cause adverse health impacts. There are three general size components: 1) PM or Total Suspended Particulate (TSP) which includes all airborne particles regardless of size or source; 2) PM<sub>10</sub> which includes airborne particles 10µm [micrometers] in size and smaller; and 3) PM<sub>2.5</sub> or fine airborne particles 2.5µm [micrometers] and smaller.

**Primary Trips:** Trips made for the specific purpose of visiting the proposed facility.

**Passby Trip:** Trips made as an intermediate stop on the way from an origin to a destination without a route diversion.

**Project:** The whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and that is any of the following:

- (1) An activity directly undertaken by any public agency including but not limited to public works construction and related activities clearing or grading of land, improvements to existing public structures, enactment and amendment of zoning ordinances, and the adoption and amendment of local General Plans or elements thereof pursuant to Government Code Sections 65100–65700.
- (2) An activity undertaken by a person which is supported in whole or in part through public agency contacts, grants, subsidies, loans, or other forms of assistance from one or more public agencies.



- (3) (3) An activity involving the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies.

**Responsible Agency:** A public agency, other than the Lead Agency, that has responsibility for carrying out or approving a project subject to CEQA.

**Sensitive Receptors:** People that have an increased sensitivity to air pollution or environmental contaminants. Sensitive receptor locations include schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling unit(s). The location of sensitive receptors is needed to assess toxic impacts on public health.

**Significant effect on the environment:** means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.

**Smart Growth:** Smart or strategic growth is an urban planning and transportation theory that concentrates growth in the center of a city to avoid urban sprawl; and advocates compact, transit-oriented, walkable, bicycle-friendly land use, including neighborhood schools, complete streets, and mixed-use development with a range of housing choices.

**Stationary Sources:** Non-mobile sources such as power plants, refineries, and manufacturing facilities which emit air pollutants. (See also mobile sources).

**Threshold of significance:** An identifiable quantitative, qualitative or performance level of a particular environmental effect. Non-compliance with a threshold of significance means the effect will normally be determined to be significant by the Lead agency. Compliance with a threshold of significance means the effect normally will be determined to be less than significant (CCR §15064.7).

**Toxic Air Contaminants (TACs):** Toxic pollutants in California are identified as toxic air contaminants (TACs) and are listed in the AB2588 Air Toxic “Hot Spots” and Assessment Act’s “Emissions Inventory Criteria and Guideline Regulation”. A subset of these pollutants has been listed by the Office of Environmental Health Hazard Assessment (OEHHA) as having acute, chronic, and/or carcinogenic effects, as defined by California Health and Safety Code (CH&SC) §39655. Toxic pollutants used for modeling should not be confused with the 189 Hazardous Air Pollutants (HAP) listed by EPA in the Clean Air Act, the California TAC list has ~700 plus pollutants listed.

**Trustee Agency:** An agency that has “jurisdiction by law” over a particular natural resource, but does not have discretionary approval power over a project subject to CEQA.

**Verified Diesel Emission Control Strategy:** Diesel vehicle or equipment exhaust retrofits that have been verified by the California Air Resources Board (ARB) that provide



specified diesel particulate emission reductions when implemented in compliance with the ARB executive order for the device ([www.arb.ca.gov/diesel/verdev/verdev.htm](http://www.arb.ca.gov/diesel/verdev/verdev.htm)).

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## **CHAPTER 1**

# **INTRODUCTION**

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## 1.1. Purpose of this Guide

The California Environmental Quality Act (CEQA) requires environmental impacts of a proposed project be identified, assessed, and avoided or mitigated as feasible, if these impacts are significant. This document, *Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI)*, provides technical guidance for the review of air quality impacts from proposed projects within the boundaries of the San Joaquin Valley Unified Air Pollution Control District (District). The guide provides District staff uniform procedures for assessing potential air quality impacts of proposed projects and for preparing the air quality section of environmental documents. The guide is intended to be an advisory document for use by other agencies; consultants, and project proponents.



## 1.2. Using This Guide

This guide presents information which is not subject to frequent revision, such as general guidance for assessing and mitigating project related impacts on air quality, information on air quality conditions within the San Joaquin Valley Air Basin, District attainment status, and District recommended procedures relating to CEQA. Information which is subject to more frequent revision, such as methodologies and models to assess project related impacts on air quality, is contained in separate technical guidance documents available on the District's website at: [www.valleyair.org](http://www.valleyair.org). A current list of technical guidance documents is presented in Appendix A - *Technical Resources*.

The District will prepare additional technical guidance and update existing documents as approaches and methodologies for characterizing project related impacts on air quality become available. Users of this Guide are responsible for ensuring that they are using the most current technical guides when preparing environmental assessments. Technical guides and resources are available on the District's website at [www.valleyair.org](http://www.valleyair.org) or can be obtained by contacting the District's Central Region office at:

Phone: (559) 230-6000  
e-mail: CEQA: [CEQA@Valleyair.org](mailto:CEQA@Valleyair.org)  
Modeling: [hramodeler@valleyair.org](mailto:hramodeler@valleyair.org)  
Mail: San Joaquin Valley Air Pollution Control District  
1990 E. Gettysburg Avenue  
Fresno, CA 93726



## **CHAPTER 2**

# **SAN JOAQUIN VALLEY AIR BASIN**

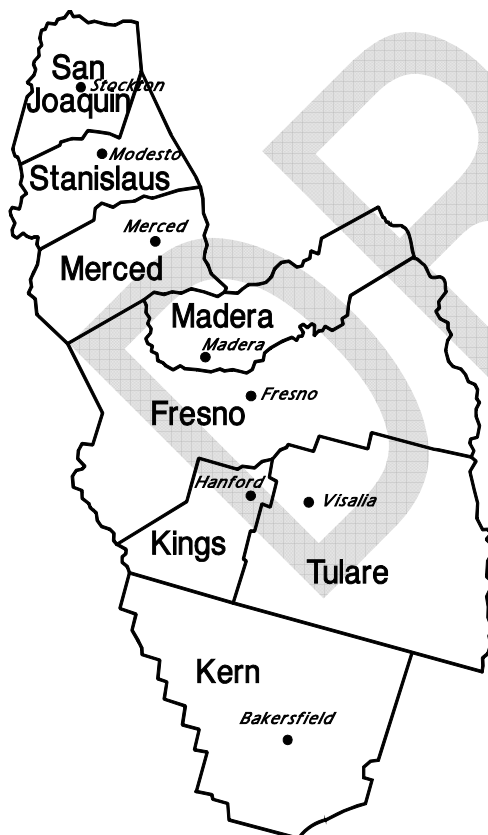
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## 2.1. Introduction

The San Joaquin Valley Air Basin (SJVAB) consists of eight counties: Fresno, Kern (western and central), Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare (Figure 1 – San Joaquin Valley Air Pollution Control District Boundaries). Cumulatively, these counties represent approximately 16 percent of California's geographic area, making the SJVAB the second largest air quality basin (based on area) as delineated by the California Air Resources Board (ARB). Air pollution in the SJVAB can be attributed to both human-related (anthropogenic) and natural (non-anthropogenic) activities that produce emissions. Air pollution from significant anthropogenic activities in the SJVAB includes a variety of industrial-based sources as well as on- and off-road mobile sources. Activities that tend to increase mobile activity include increases in population, increases in general traffic activity (including automobiles, trucks, aircraft, and rail), urban sprawl (which will increase commuter driving distances), and general local land management practices as they pertain to modes of commuter transportation. These sources, coupled with geographical and meteorological conditions unique to the area, stimulate the formation of unhealthy air.

**Figure 1 – San Joaquin Valley Air Pollution Control District Boundaries**



The San Joaquin Valley's (SJV) topography and meteorology provide ideal conditions for trapping air pollution for long periods of time and producing harmful levels of air pollutants, including ozone and particulate matter. Low precipitation levels, cloudless days, high temperatures, and light winds during the summer in the SJV are conducive to high ozone levels resulting from the photochemical reaction of nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC). Inversion layers in the atmosphere during the winter can trap emissions of directly emitted PM<sub>2.5</sub> (particulate matter that is 2.5 microns or less in diameter) and PM<sub>2.5</sub> precursors (such as NO<sub>x</sub> and sulfur dioxide (SO<sub>2</sub>)) within the SJV for several days, accumulating to unhealthy levels.

The region also houses the State's major arteries for goods and people movement, I-5 to the west and CA Highway 99 through the central valley, thereby attracting a large volume of vehicular traffic. Another compounding factor is the region's historically high rate of population growth compared to other regions



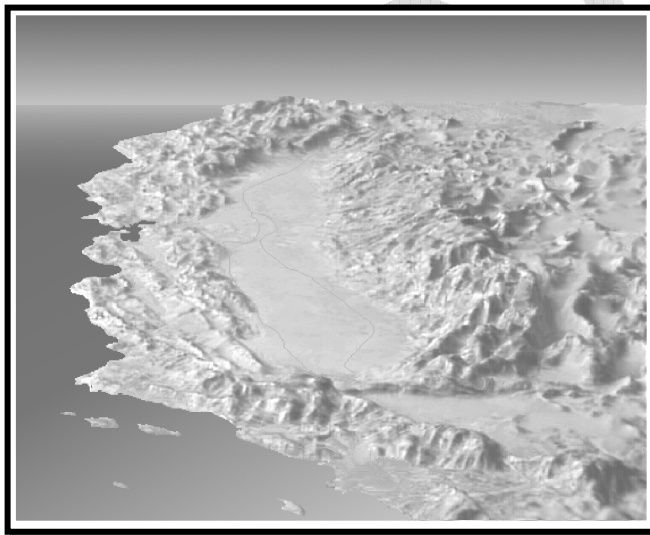
of California. Increased population typically results in an even greater increase in vehicle activity and more consumer product use, leading to increased emissions of air pollution, including NO<sub>x</sub>. In fact, mobile sources account for about 80% of the Valley's total NO<sub>x</sub> emissions inventory. Since NO<sub>x</sub> is a significant precursor for both ozone and PM<sub>2.5</sub>, reducing NO<sub>x</sub> from mobile sources is critical for progressing the Valley towards attainment of ozone and PM<sub>2.5</sub> standards.

The geography of mountainous areas to the east, west and south, in combination with long summers and relatively short winters, contributes to local climate episodes that prevent the dispersion of pollutants. Transport, as affected by wind flows and inversions, also plays a role in the creation of air pollution.

## 2.2. Topography

The climate of the SJV is modified by topography. This creates climatic conditions that are particularly conducive to air pollution formation. Figure 2 (*Aerial View of the San Joaquin Valley Air Basin*) provides an aerial view of the SJV illustrating its bowl shape. As shown, the SJV is surrounded by mountains on three sides and open to the Sacramento Valley and the San Francisco Bay Area to the north.

**Figure 2 – Aerial View of the San Joaquin Valley Air Basin**



The SJVAB is the southern half of California's Central Valley and is approximately 250 miles long and averages 35 miles wide. The SJV is bordered by the Sierra Nevada Mountains in the east (8,000 to 14,491 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 7,981 feet in elevation). There is a slight downward elevation gradient from Bakersfield in the southeast end (elevation 408 feet) to sea level at the northwest end where the valley opens to the San Francisco Bay at the Carquinez

Straits. At its northern end is the Sacramento Valley, which comprises the northern half of California's Central Valley. The bowl shaped topography inhibits movement of pollutants out of the valley.



## 2.3. Climate

The SJV is in a Mediterranean Climate Zone. Mediterranean Climate Zones occur located on the west coast of continents at 30 to 40 degrees latitude and are influenced by a subtropical high-pressure cell most of the year. Mediterranean Climates are characterized by sparse rainfall, which occurs mainly in winter. Summers are hot and dry. Summertime maximum temperatures often exceed 100 degrees F in the valley.



The subtropical high-pressure cell is strongest during spring, summer and fall and produces subsiding air, which can result in temperature inversions in the valley. A temperature inversion can act like a lid, inhibiting vertical mixing of the air mass at the surface. Any emissions of pollutants can be trapped below the inversion. Most of the surrounding mountains are above the normal height of summer inversions (1,500-3,000 feet).

Winter-time high pressure events can often last many weeks with surface temperatures often lowering into the thirties degree Fahrenheit. During these events, fog can be present and inversions are extremely strong. These wintertime inversions can inhibit vertical mixing of pollutants to a few hundred feet.

## 2.4. Wind Patterns

Wind speed and direction play an important role in dispersion and transport of air pollutants. Wind at the surface and aloft can disperse pollution by mixing and by transporting the pollution to other locations.

Especially in summer, winds in the valley most frequently blow from the northwesterly direction. The region's topographic features restrict air movement and channel the air mass towards the southeastern end of the valley. Marine air can flow into the basin from the San Joaquin River Delta and over Altamont Pass and Pacheco Pass, where it can flow along the axis of the valley, over the Tehachapi pass, into the Southeast Desert Air Basin. The Coastal Range is a barrier to air movement to the west and the high Sierra Nevada range is a significant barrier to the east (the highest peaks in the southern Sierra Nevada reach





almost halfway through the Earth's atmosphere). Many days in the winter are marked by stagnation events where winds are very weak. Transport of pollutants during winter can be very limited. A secondary but significant summer wind pattern is from the southeasterly direction and can be associated with nighttime drainage winds, prefrontal conditions and summer monsoons.

Two significant diurnal wind cycles that occur frequently in the valley are the sea breeze and mountain-valley upslope and drainage flows. The sea breeze can accentuate the northwest wind flow, especially on summer afternoons. Nighttime drainage flows can accentuate the southeast movement of air down the valley. In the mountains during periods of weak synoptic scale winds, winds tend to be upslope during the day and a downslope at night. Nighttime and drainage flows are especially pronounced during the winter when flow from the easterly direction is enhanced by nighttime cooling in the Sierra Nevada. Eddies can form in the valley wind flow and can re-circulate a polluted air mass for an extended period. Such an eddy occurs in the Fresno area during both winter and summer.

## **2.5. Temperature, Sunlight and Ozone Production**

Solar radiation and temperature are particularly important in the chemistry of ozone formation. The SJVAB averages over 260 sunny days per year. Photochemical air pollution (primarily ozone) is produced by the atmospheric reaction of organic substances (such as volatile organic compounds) and nitrogen dioxide under the influence of sunlight. Ozone concentrations are very dependent on the amount of solar radiation, especially during late spring, summer and early fall. Ozone levels typically peak in the afternoon. After the sun goes down, the chemical reaction between nitrous oxide and ozone begins to dominate. This reaction tends to scavenge the ozone in the metropolitan areas through the early morning hours, resulting in the lowest ozone levels, possibly reaching zero at sunrise in areas with high nitrogen oxides emissions. At sunrise, nitrogen oxides tend to peak, partly due to low levels of ozone at this time and also due to the morning commuter vehicle emissions of nitrogen oxides.

Generally, the higher the temperature, the more ozone formed, since reaction rates increase with temperature. However, extremely hot temperatures can “lift” or “break” the inversion layer. Typically, if the inversion layer doesn’t lift to allow the buildup of contaminants to be dispersed, the ozone levels will peak in the late afternoon. If the inversion layer breaks and the resultant afternoon winds occur, the ozone will peak in the early afternoon and decrease in the late afternoon as the contaminants are dispersed or transported out of the SJVAB.

Ozone levels are low during winter periods when there is much less sunlight to drive the photochemical reaction.



## 2.6. Temperature Inversions

The vertical dispersion of air pollutants in the SJV can be limited by persistent temperature inversions. Air temperature in the lowest layer of the atmosphere typically decreases with altitude. A reversal of this atmospheric state, where the air temperature increases with height, is termed an inversion. The height of the base of the inversion is known as the “mixing height”. This is the level to which pollutants can mix vertically. Mixing of air is minimized above and below the inversion base. The inversion base represents an abrupt density change where little air movement occurs.

Inversion layers are significant in determining pollutant concentrations. Concentration levels can be related to the amount of mixing space below the inversion. Temperature inversions that occur on the summer days are usually encountered 2,000 to 2,500 feet above the valley floor. In winter months, overnight inversions occur 500 to 1,500 feet above the valley floor.

## 2.7. Precipitation, Humidity and Fog

Precipitation and fog may reduce or limit some pollutant concentrations. Ozone needs sunlight for its formation, and clouds and fog can block the required solar radiation.

Wet fogs can cleanse the air during winter as moisture collects on particles and deposits them on the ground. Atmospheric moisture can also increase pollution levels. In fogs with less water content, the moisture acts to form secondary ammonium nitrate particulate matter. This ammonium nitrate is part of the valleys PM<sub>2.5</sub> and PM<sub>10</sub> problem.



The winds and unstable air conditions experienced during the passage of winter storms result in periods of low pollutant concentrations and excellent visibility. Between winter storms, high pressure and light winds allow cold moist air to pool on the SJV floor. This creates strong low-level temperature inversions and very stable air conditions, which can lead to Tule fog. Wintertime conditions favorable to fog formation are also conditions favorable to high concentrations of PM<sub>2.5</sub> and PM<sub>10</sub>.

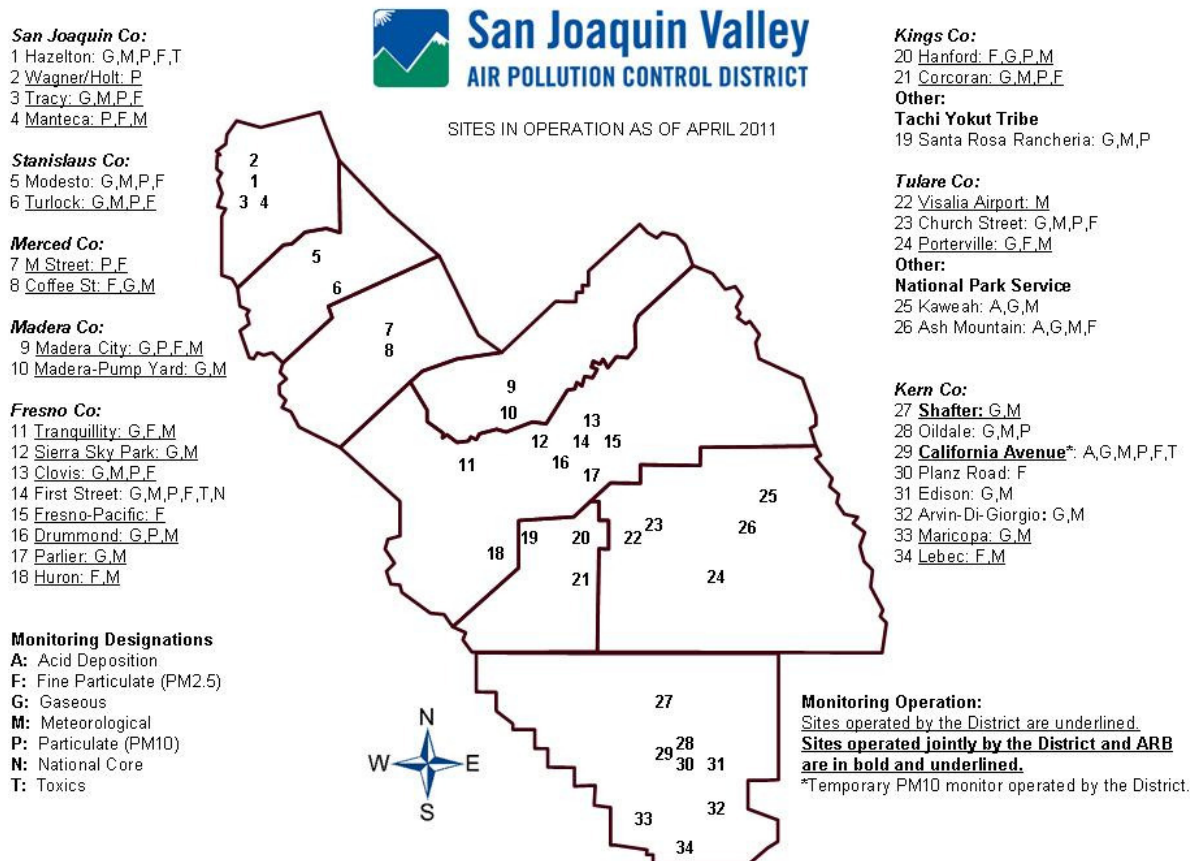
## 2.8. Ambient Air Quality Monitoring Sites

The District, the ARB, the U.S. National Park Service, and the Santa Rosa Rancheria in Lemoore operate an extensive air monitoring network to measure progress toward attainment of the NAAQS. Air quality monitoring networks are designed to monitor areas



with: high population densities, areas with high pollutant concentrations, areas impacted by major pollutant sources, and areas representative of background concentrations. Some monitors are operated specifically for use in determining attainment status, while others are operated for other purposes, such as for generating daily air quality forecasts. In total, the District utilizes ozone and PM data from over 60 monitors operated at 29 sites in the Valley. All monitors must comply with the pollutant standard for the San Joaquin Valley to be considered as attainment for that standard. Figure 3 (*District Ambient Air Quality Monitoring Sites*) identifies District air monitoring sites and the pollutants monitored at each site, as of this writing. The District periodically updates this map located on the District website at: <http://www.valleyair.org/aqinfo/MonitoringSites.htm>

**Figure 3 – District Ambient Air Quality Monitoring Sites**



An Environmental Impact Report prepared for projects with the potential to have a significant impact on air quality within the San Joaquin Valley should include a discussion of local air quality conditions. To assist Lead Agencies, the District has developed the technical guide (*Emissions Inventory Data Guide*), which provides a step-by-step process for identifying and compiling relevant ambient air monitoring data.



## **CHAPTER 3**

# **AIR POLLUTANTS AND ATTAINMENT STATUS**

DRAFT



### 3.1. Introduction

A substance in the air that can cause harm to humans and the environment is known as an air pollutant. Pollutants can be in the form of solid particles, liquid droplets, or gases. In addition, they may be natural or man-made. Pollutants can be classified as primary or secondary. Usually, primary pollutants are directly emitted from a process, such as ash from a volcanic eruption, carbon monoxide gas from a motor vehicle exhaust or sulfur dioxide released from factories. Secondary pollutants are not emitted directly. Rather, they form in the air when primary pollutants react or interact. An important example of a secondary pollutant is ground level ozone — one of the many secondary pollutants that make up photochemical smog. Some pollutants may be both primary and secondary: that is, they are both emitted directly and formed from other primary pollutants.

### 3.2. Federal and State Ambient Air Quality Standards

The Clean Air Act (CAA) requires the Federal Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six (6) air pollutants commonly found all over the United States. These pollutants can be detrimental to human health and the environment.



The EPA designates areas with air quality not meeting Federal standards as “nonattainment”. The Federal CAA further classifies nonattainment areas based on the severity of the nonattainment problem, with marginal, moderate, serious, severe, and extreme nonattainment classifications for ozone. Nonattainment classifications for PM range from marginal to serious.

The Federal CAA requires areas with air quality violating the NAAQS to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The SIP contains the strategies and control measures that states will use to attain the NAAQS. The Federal CAA amendments of 1990 require states containing areas that violate the NAAQS to revise their SIP to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, rules, and regulations of Air Basins as reported by the agencies with jurisdiction over them. The EPA reviews SIPs to determine if they conform to the mandates of the Federal CAA amendments and will achieve air quality goals when implemented. If the EPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan (FIP) for the nonattainment area and impose additional control measures.

States may also establish their own ambient air quality standards, provided the State standards are at least as stringent as the NAAQS. California has established California Ambient Air Quality Standards (CAAQS) pursuant to Health and Safety Code Section 39606(b) and its predecessor statutes. The ARB is the agency responsible for



coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA) of 1988. The CCAA classifies ozone nonattainment areas as moderate, serious, severe, and extreme based on severity of violations of State ambient air quality standards. For each class, the CCAA specifies air quality management strategies that must be adopted. For all nonattainment categories, attainment plans are required to demonstrate a five-percent-per-year reduction in nonattainment air pollutants or their precursors, averaged every consecutive three-year period, unless an approved alternative measure of progress is developed. Air Districts with air quality that is in violation of CAAQS are required to prepare an air quality attainment plan that lays out a program to attain the CCAA mandates.

### 3.3. Criteria Pollutants

The Clean Air Act requires EPA to set National Ambient Air Quality Standards for six common air pollutants. These commonly found air pollutants (also known as "criteria pollutants") are found all over the United States. They are particle pollution (often referred to as particulate matter), ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. These pollutants can harm your health and the environment, and cause property damage. Of the six pollutants, particle pollution and ground-level ozone are the most widespread health threats. EPA calls these pollutants "criteria" air pollutants because it regulates them by developing human health-based and/or environmentally-based criteria (science-based guidelines) for setting permissible levels. The set of limits based on human health is called primary standards. Another set of limits intended to prevent environmental and property damage is called secondary standards.

The following section summarizes the pollutants of greatest importance in the San Joaquin Valley. For each air pollutant it provides a description of the physical properties, health and other effects, sources, and the extent of the problems. These pollutants are identified in District Rule 1010 (Definitions) and District Rule 2201 (New and Modified Stationary Source Rule) as "Affected Pollutants".

In general, primary pollutants are directly emitted into the atmosphere, and secondary pollutants are formed by chemical reactions in the atmosphere. Air pollution in the Valley results from emissions generated in the Valley as well as from emissions and secondary pollutants transported into the Valley. It is thought that the bulk of the Valley's summer and winter air pollution is caused by locally generated emissions. Due to the Valley's meteorology, topography, and the chemical composition of the air pollutants, oxides of nitrogen (NO<sub>x</sub>) is the primary culprit in the formation of both ozone and PM<sub>2.5</sub>.

Ozone: (O<sub>3</sub>), a reactive gas consisting of three oxygen atoms. In the troposphere, it is a product of the photochemical process involving the sun's energy. It is a secondary pollutant that is formed when nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC) react in the presence of sunlight. Ozone at the earth's surface causes numerous adverse health effects and is a criteria pollutant. It is a major component of smog. In the



stratosphere, ozone exists naturally and shields Earth from harmful incoming ultraviolet radiation.

High concentrations of ground level ozone can adversely affect the human respiratory system and aggravate cardiovascular disease and many respiratory ailments. Ozone also damages natural ecosystems such as forests and foothill communities, agricultural crops, and some man-made materials, such as rubber, paint, and plastics.

Total Organic Gases: (TOG), includes all of the reactive organic gases, in addition to low reactivity organic compounds like methane and acetone. Reactive organic gases (ROG) and volatile organic compounds (VOC) are subsets of ROG.

Reactive Organic Gas: (ROG), a reactive chemical gas, composed of hydrocarbon compounds that may contribute to the formation of smog by their involvement in atmospheric chemical reactions. No separate health standards exist for ROG as a group. Because some compounds that make up ROG are also toxic, like the carcinogen benzene, they are often evaluated as part of a toxic risk assessment.

Volatile Organic Compounds: (VOC), hydrocarbon compounds that exist in the ambient air. VOCs contribute to the formation of smog and/or may themselves be toxic. VOC emissions are a major precursor to the formation of ozone. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints.

Oxides of Nitrogen: (NO<sub>x</sub>) are a family of gaseous nitrogen compounds and are precursors to the formation of ozone and particulate matter. The major component of NO<sub>x</sub>, nitrogen dioxide (NO<sub>2</sub>), is a reddish-brown gas that is toxic at high concentrations. NO<sub>x</sub> results primarily from the combustion of fossil fuels under high temperature and pressure. On-road and off-road motor vehicles and fuel combustion are the major sources of this air pollutant.

Particulate Matter: Also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health problems. EPA is concerned about particles that are 10 micrometers in diameter or smaller because those are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. EPA groups particle pollution into three categories based on their size and where they are deposited:

- "Inhalable coarse particles (PM<sub>2.5-10</sub>)," such as those found near roadways, and dusty industries, are between 2.5 and 10 micrometers in diameter. PM<sub>2.5-10</sub> is deposited in the thoracic region of the lungs.
- "Fine particles (PM<sub>2.5</sub>)," such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller. These particles can be directly emitted from



sources such as forest fires, or they can form when gases emitted from power plants, industries and automobiles react in the air. They penetrate deeply into the thoracic and alveolar regions of the lungs.

- “Ultrafine particles (UFP),” are very, very small particles less than 0.1 micrometers in diameter largely resulting from the combustion of fossil fuels, meat, wood and other hydrocarbons. While UFP mass is a small portion of  $PM_{2.5}$ , their high surface area, deep lung penetration, and transfer into the bloodstream can result in disproportionate health impacts relative to their mass.

$PM_{10}$ ,  $PM_{2.5-10}$ , and UFP include primary pollutants (emitted directly to the atmosphere) as well as secondary pollutants (formed in the atmosphere by chemical reactions among precursors). Generally speaking,  $PM_{2.5}$  and UFP are emitted by combustion sources like vehicles, power generation, industrial processes, and wood burning, while  $PM_{10}$  sources include these same sources plus roads and farming activities. Fugitive windblown dust and other area sources also represent a source of airborne dust in the Valley.

Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis, and respiratory illnesses in children.

Carbon Monoxide: (CO) is an odorless, colorless gas that is highly toxic. It is formed by the incomplete combustion of fuels and is emitted directly into the air (unlike ozone). The main source of CO in the San Joaquin Valley is on-road motor vehicles. Other CO sources in the Valley include other mobile sources, miscellaneous processes, and fuel combustion from stationary sources.

Because of the local nature of CO problems, ARB and EPA designate urban areas as CO nonattainment areas instead of the entire basin as with ozone and  $PM_{10}$ . Motor vehicles are by far the largest source of CO emissions. Emissions from motor vehicles have been declining since 1985, despite increases in vehicle miles traveled (VMT), with the introduction of new automotive emission controls and fleet turnover.

Sulfur Dioxide: ( $SO_2$ ) is a colorless, irritating gas with a "rotten egg" smell formed primarily by the combustion of sulfur-containing fossil fuels. The SJVAB is in attainment of both the Federal and California standards. However, like airborne  $NO_x$ , suspended  $SO_x$  particles contribute to the poor visibility that sometimes occurs in the Valley. These  $SO_x$  particles are also a component of  $PM_{10}$ . The prevalence of low-sulfur fuel use in the Valley has minimized problems from this pollutant.

Lead: (Pb) is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. The health effects of lead poisoning include loss of appetite, weakness, apathy, and miscarriage; it can also cause lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract.



Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels. The use of leaded fuel has been mostly phased out, with the result that ambient concentrations of lead have dropped dramatically. Lead concentrations were last systematically measured in the SJVAB in 1989, when the average concentrations were approximately five percent of the State lead standard. Though monitoring was discontinued in 1990, lead levels are probably well below applicable standards, and the SJVAB is designated in attainment for lead.

### 3.4. Other Pollutants

The State of California has established air quality standards for some pollutants not addressed by Federal standards. The California Air Resources Board (ARB) has established State standards for hydrogen sulfide, sulfates, vinyl chloride, and visibility reducing particles. The following section summarizes these pollutants and provides a description of the pollutants' physical properties, health and other effects, sources, and the extent of the problems.

Hydrogen Sulfide: ( $\text{H}_2\text{S}$ ) is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. Hydrogen sulfide is extremely hazardous in high concentrations; especially in enclosed spaces (800 ppm can cause death). OSHA regulates workplace exposure to  $\text{H}_2\text{S}$ .

Sulfates: ( $\text{SO}_4^{2-}$ ) are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to sulfur dioxide ( $\text{SO}_2$ ) during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of  $\text{SO}_2$  to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

The ARB sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, due to the fact that they are usually acidic, can harm ecosystems and damage materials and property. Data collected in the SJVAB demonstrate levels of sulfates significantly less than the health standards.

Visibility Reducing Particles: Are a mixture of suspended particulate matter consisting of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. The 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.



Vinyl Chloride: ( $C_2H_3Cl$ , also known as VCM) is a colorless gas that does not occur naturally. It is formed when other substances such as trichloroethane, trichloroethylene, and tetrachloro-ethylene are broken down. Vinyl chloride is used to make polyvinyl chloride (PVC) which is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials.

### 3.5. Attainment Status

The California Air Resources Board (ARB) and the Federal Environmental Protection Agency (EPA) have established Ambient Air Quality Standards in an effort to protect human health and welfare. Geographic areas are deemed "attainment" if these standards are met or nonattainment if they are not met. Nonattainment status is classified by the severity of the nonattainment problem, with marginal, moderate, serious, severe, and extreme nonattainment classifications for ozone. Nonattainment classifications for PM range from marginal to serious. Current Federal and State Ambient Air Quality Standards can be found on ARB's website at: <http://www.arb.ca.gov/research/aqgs/aqgs2.pdf>



At the Federal level, the District is designated as extreme nonattainment for the 8-hour ozone standard, attainment for  $PM_{10}$  and CO, and nonattainment for  $PM_{2.5}$ . At the State level, the District is designated as nonattainment for the 8-hour ozone,  $PM_{10}$ , and  $PM_{2.5}$  standards. The Valley has not attained the federal 1-hour ozone, although this standard was revoked in 2005. The District's attainment status, at the time of this writing, is presented in Table 1 (*San Joaquin Valley Attainment Status*). Although infrequent, the District's attainment status does change. The District's current attainment status can be found on the District's website at: <http://www.valleyair.org/aqinfo/attainment.htm>



**Table 1 – San Joaquin Valley Attainment Status**

| Pollutant                     | Designation/Classification    |                         |
|-------------------------------|-------------------------------|-------------------------|
|                               | <u>Federal Standards</u>      | <u>State Standards</u>  |
| Ozone - One hour              | Revoked in 2005               | Nonattainment/Severe    |
| Ozone - Eight hour            | Nonattainment/Extreme         | Nonattainment           |
| PM 10                         | Attainment                    | Nonattainment           |
| PM 2.5                        | Nonattainment                 | Nonattainment           |
| Carbon Monoxide               | Attainment/Unclassified       | Attainment/Unclassified |
| Nitrogen Dioxide              | Attainment/Unclassified       | Attainment              |
| Sulfur Dioxide                | Attainment/Unclassified       | Attainment              |
| Lead (Particulate)            | No Designation/Classification | Attainment              |
| Hydrogen Sulfide              | No Federal Standard           | Unclassified            |
| Sulfates                      | No Federal Standard           | Attainment              |
| Visibility Reducing Particles | No Federal Standard           | Unclassified            |
| Vinyl Chloride                | No Federal Standard           | Attainment              |

### 3.6. Air Quality Plans

The District has developed plans to attain State and Federal standards for ozone and particulate matter. The District's air quality plans include emissions inventories to measure the sources of air pollutants, to evaluate how well different control methods have worked, and to show how air pollution will be reduced. The plans also use computer modeling to estimate future levels of pollution and make sure that the Valley will meet air quality goals. The District's attainment plans are subject to approval by the District's Governing Board. More information about Federal and State air quality standards and the District's current attainment status can be found on-line at the District's website [www.valleyair.org](http://www.valleyair.org). At the time of this writing, the following attainment plans were in effect.



### 1-Hour Ozone Plan

CARB submitted the *2004 Extreme Ozone Attainment Demonstration Plan* to the US EPA on November 15, 2004. The plan was amended by the District in 2008. Effective June 15, 2005 the US EPA revoked the Federal 1-hour ozone ambient air quality standard, finding that the 8-hour ozone standard was more health protective. Under federal anti-backsliding provisions, the District has implemented the 2004 plan's control measures and emissions reductions strategies, and the Valley must still attain the revoked standard before it can rescind the CAA Section 185 fees collected under Rule 3170.

### 8-Hour Ozone Plan

The District's Governing Board adopted the *2007 Ozone Plan* on April 30, 2007. This far-reaching plan, with innovative measures and a "dual path" strategy, assures expeditious attainment of the Federal 8-hour ozone standard as set by US EPA in 1997. The plan projects that the Valley will achieve the 8-hour ozone standard for all areas of the SJVAB no later than 2023. CARB approved the plan on June 14, 2007. EPA approved the *2007 Ozone Plan* effective April 30, 2012. As of this writing, it is expected that the plan addressing EPA's 2008 revised 8-hour ozone standard will be due to EPA in 2015.

### PM<sub>10</sub> Plan

Based on PM<sub>10</sub> measurements from 2003-2006, EPA found that the SJVAB has reached Federal PM<sub>10</sub> standards. On September 21, 2007, the District's Governing Board adopted the *2007 PM<sub>10</sub> Maintenance Plan and Request for Redesignation*. This plan demonstrates that the Valley will continue to meet the PM<sub>10</sub> standard. EPA approved the document and on September 25, 2008, the SJVAB was redesignated to attainment.

### PM<sub>2.5</sub> Plan

The Valley is designated nonattainment for Federal PM<sub>2.5</sub> standards. EPA set their first PM<sub>2.5</sub> standards in 1997, and they strengthened the 24-hour standard in 2006. Building upon the strategy used in the *2007 Ozone Plan*, the District agreed to additional control measures to reduce directly produced PM<sub>2.5</sub>. The District's Governing Board adopted the *2008 PM<sub>2.5</sub> Plan* on April 30, 2008. The plan estimates that the SJVAB will reach the PM<sub>2.5</sub> standard by 2014. The ARB approved the Plan on May 22, 2008. EPA approved most provisions of the *2008 PM<sub>2.5</sub> Plan* effective January 9, 2012. The District's plan addressing EPA's 2006 revised PM<sub>2.5</sub> standard is due to EPA in December 2012.



## **CHAPTER 4**

# **GREENHOUSE GASES**

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## 4.1. Introduction

Greenhouse gases (GHGs) are gases that absorb and emit radiation within the thermal infrared range, trapping heat in the earth's atmosphere. There are no "attainment" concentration standards established by the Federal or State government for greenhouse gases. In fact, GHGs are not generally thought of as traditional air pollutants because greenhouse gases, and their impacts, are global in nature, while air pollutants affect the health of people and other living things at ground level, in the general region of their release to the atmosphere. Some greenhouse gases occur naturally and are emitted into the atmosphere through both natural processes and human activities. Other GHGs are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are carbon dioxide ( $\text{CO}_2$ ), methane ( $\text{CH}_4$ ), nitrous oxide ( $\text{N}_2\text{O}$ ), and fluorinated carbons.

## 4.2. Common Greenhouse Gases

Water Vapor: Although not considered a pollutant, water vapor is the most important, abundant, and variable GHG. In the atmosphere, it maintains a climate necessary for life. The main source of water vapor is evaporation from the ocean (approximately 85 percent). Other sources include sublimation (change from solid to gas) from ice and snow, evaporation from other water bodies, and transpiration from plant leaves.



Ozone: Unlike other GHG, ozone is relatively short-lived and therefore; is not global in nature. It is difficult to make an accurate determination of the contribution of ozone precursors (nitrogen oxides and volatile organic compounds) to global climate change (AEP 2007).

Aerosols: Are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light. Cloud formation can also be affected by aerosols. Sulfate aerosols are emitted when fuel-containing sulfur is burned. Black carbon (or soot) is emitted during bio mass burning or incomplete combustion of fossil fuels. Particulate matter regulation has been lowering aerosol concentrations in the United States; however, global concentrations are likely increasing.



Chlorofluorocarbons: (CFCs) are gases formed synthetically by replacing all hydrogen atoms in methane ( $\text{CH}_4$ ) or ethane ( $\text{C}_2\text{H}_6$ ) with chlorine and/or fluorine atoms. CFCs are nonflammable, nontoxic, insoluble, and chemically uncreative in the troposphere (the level of air at the earth's surface). CFCs were first synthesized in 1928 for use as cleaning solvents, refrigerants, and aerosol propellants. They destroy stratospheric ozone; therefore, their production was stopped as required by the Montreal Protocol in 1987 (AEP 2007).

Carbon dioxide: ( $\text{CO}_2$ ) is an odorless, colorless gas, which has both natural and anthropogenic sources. Natural sources include the following: respiration of bacteria, plants, animals, and fungus, evaporation from oceans, volcanic out gassing, and decomposition of dead organic matter. Anthropogenic sources of carbon dioxide are from burning coal, oil, natural gas, and wood. Concentrations of  $\text{CO}_2$  were 379 parts per million (ppm) in 2005, which is an increase of 1.4 ppm per year since 1960 (AEP 2007).

Methane: ( $\text{CH}_4$ ) is a flammable gas and is the main component of natural gas. When one molecule of  $\text{CH}_4$  is burned in the presence of oxygen, one molecule of carbon dioxide and two molecules of water are released. There are no direct ill health effects from  $\text{CH}_4$ . A natural source of  $\text{CH}_4$  is from the anaerobic decay of organic matter. Geological deposits, known as natural gas fields, also contain  $\text{CH}_4$ , which is extracted for fuel. Other sources are from cattle, fermentation of manure, and landfills.

Nitrous oxide: ( $\text{N}_2\text{O}$ ), also known as laughing gas, is a colorless greenhouse gas. Higher concentrations of  $\text{N}_2\text{O}$  can cause euphoria, dizziness, and slight hallucinations.  $\text{N}_2\text{O}$  is produced by microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (nitric acid production, nylon production, fossil fuel-fired power plants, and vehicle emissions) also contribute to its atmospheric load. It is used in racecars, rocket engines, and as an aerosol spray propellant.

Fluorinated Gases: Are gases that are synthetic, powerful GHG that are emitted from a variety of industrial processes.

Hydrofluorocarbons: (HFCs) are synthetic man-made chemicals that are used as a substitute for CFCs (Chlorofluorocarbons) for automobile air conditioners and refrigerants.

Perfluorocarbons: (PFCs) have stable molecular structures and do not break down though the chemical processes in the lower atmosphere. High-energy ultraviolet rays, roughly 60 kilometers above the earth's surface are able to destroy the compounds. PFCs have long lifetimes, ranging between 10,000 and 50,000 years. Two common PFCs are



tetrafluoromethane and hexafluoroethane. Concentrations of tetrafluoromethane in the atmosphere are over 70 parts per trillion (ppt) (AEP 2007). The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

Sulfur hexafluoride: ( $\text{SF}_6$ ) is an inorganic, colorless, odorless, nontoxic, nonflammable gas. Concentrations in the 1990s were roughly 4 ppt (AEP 2007).  $\text{SF}_6$  is used for insulation in electric power transmission and distribution equipment, in semiconductor manufacturing, the magnesium industry, and as a tracer gas for leak detection.

Additional information on GHG and global climate change can be found in the supporting staff report titled: *Addressing Greenhouse Gas Emissions Impacts Under The California Environmental Quality Act*.

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## **CHAPTER 5**

# **AIR POLLUTANT EMISSION SOURCES**

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## 5.1. Introduction

In general, primary pollutants are directly emitted into the atmosphere, and secondary pollutants are formed by chemical reactions in the atmosphere. Air pollution in the Valley results from emissions generated in the Valley as well as from emissions and secondary pollutants transported into the Valley. It is thought that the bulk of the Valley's summer and winter air pollution is caused by locally generated emissions.

The types of air pollutant emission sources are commonly characterized as either point or area sources. A point source is a single, identifiable source of air pollutant emissions (for example, the emissions from a combustion furnace flue gas stack). An area source is a source of diffuse air pollutant emissions (for example, the emissions from a forest fire, a landfill or the evaporated vapors from a large spill of volatile liquid).

Sources may be further characterized as either stationary or mobile. Industrial boilers are examples of stationary sources and buses are examples of mobile sources. Sources may also be characterized as either urban or rural because urban areas constitute a so-called heat island and the heat rising from an urban area causes the atmosphere above an urban area to be more turbulent than the atmosphere above a rural area. Sources may be characterized by their elevation relative to the ground as either surface or ground-level, near surface or elevated sources. Sources may also be characterized by their time duration. Short-term sources (for example, accidental emission releases or construction emissions) constitute intermittent emissions. Long-term sources (Stationary Sources and development projects) constitute continuous emissions.

The District uses comprehensive emissions inventories to develop control strategies, determine the effectiveness of permitting and control programs, provide input into ambient dispersion models, fulfill reasonable further progress requirements, and screen sources for compliance investigations. Emissions inventory data, like ambient monitoring data, are also used as indicators for trends in air pollution. Typically, an emissions inventory is also organized by emission source category. Source categories consist of several broad groups:

## 5.2. Point Sources (Stationary Sources)

Facilities that have valid District permits for specific emissions units are called point sources. Refineries, gas stations, dry cleaners and industrial plants are examples of point sources in the District. Aggregated point sources are sources that are not inventoried individually but are estimated as a group and reported as a single source category.





### 5.3. Area Sources

Area source emissions are from sources that are not permitted by the District, or are individually so small that they may not be included in the District's emissions survey system. These small sources may not individually emit significant amounts of pollutants, but when aggregated can make an appreciable contribution to the emission inventory. Examples of these area sources are residential water heating and use of paints, varnishes, and consumer products. Emissions from these sources are grouped into categories and calculated based on surrogate variables.



### 5.4. Mobile Sources

Mobile sources consist of motor vehicles and other portable sources. Mobile sources are classified as being on-road or off-road. On-road motor vehicles consist of passenger cars, trucks, buses and motorcycles. Emissions from on-road motor vehicles are a major portion of the emission inventory, and are estimated by ARB using computer models. Off-road mobile sources generally consist of vehicles in which the primary function is not transportation. Examples of off-road vehicles include construction and farm equipment.



Other mobile sources include boats and ships, trains, and aircraft. The District estimates emissions for ships and aircraft in our area source inventory. The remaining sources are estimated by ARB as part of their off-road inventory.

### 5.5. Natural Sources

Natural Sources are non-anthropogenic, naturally occurring emissions. In addition to man-made air pollution, there are significant quantities of pollutants from natural sources. Natural sources include biological and geological sources, wildfires, windblown dust, and biogenic emissions from plants and trees. Emissions from natural sources are estimated by ARB.





## **CHAPTER 6**

# **LAND USE AND AIR QUALITY**

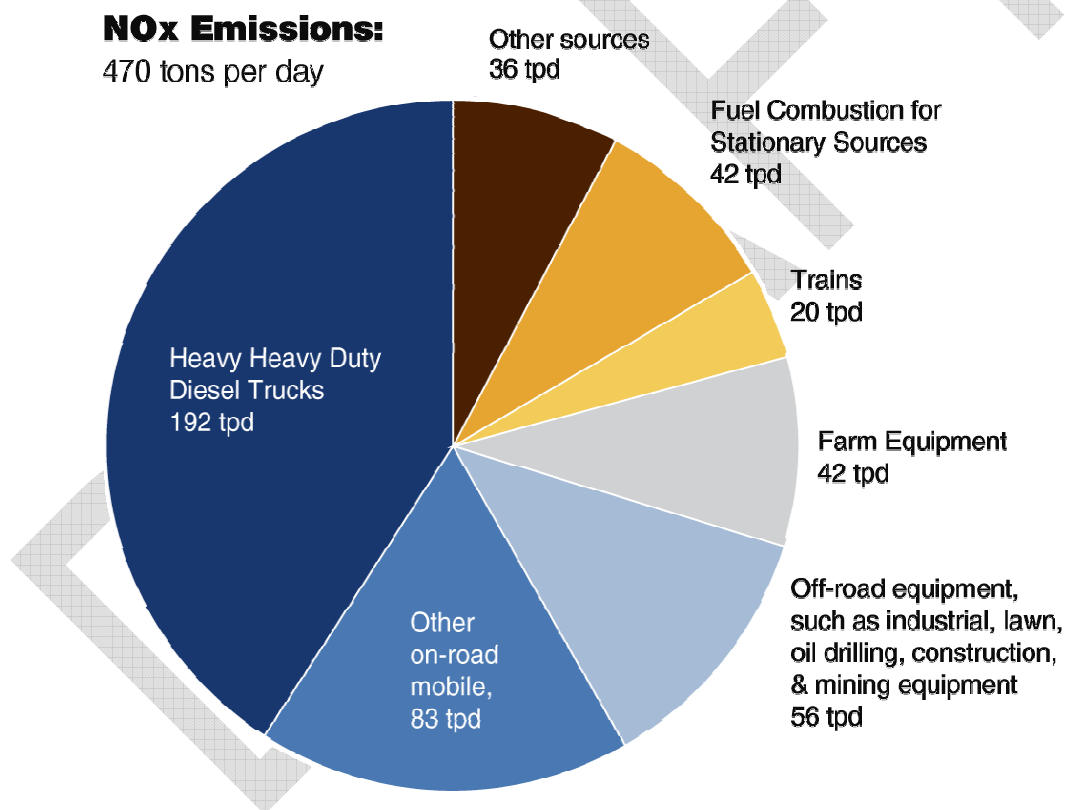
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## 6.1. Introduction

Nearly all development projects within the San Joaquin Valley Air Basin, from general plans to individual development projects have the potential to generate air pollutants, making it more difficult to attain State and Federal ambient air quality standards. Land use decisions are critical to improving air quality within the San Joaquin Valley Air Basin because land use patterns greatly influence transportation needs and motor vehicle emissions are the largest source of air pollution. Land use decisions and project design elements; such as preventing urban sprawl, encouraging mix-use development, and project designs that reduce vehicle miles traveled (VMT) have proven benefit for air quality.

**Figure 4 - Sources of NOX Emissions within the San Joaquin Valley Air Basin**





## **6.2. Assembly Bill 170, Reyes (AB 170)**

Assembly Bill 170, Reyes (AB 170), was adopted by State lawmakers in 2003 creating Government Code §65302.1 which requires cities and counties in the San Joaquin Valley to amend their general plans to include data and analysis, comprehensive goals, policies and feasible implementation strategies designed to improve air quality. These amendments are due no later than one year from the due date specified for the next revisions of a jurisdiction's housing element. As required in §65302.1.b, cities and counties within the San Joaquin Valley must amend their general plan to include a discussion of the status of air quality and strategies to improve air quality. The elements to be amended include, but are not limited to, those elements dealing with land use, circulation, housing, conservation, and open space. Section 65302.1.c identifies four (4) areas of air quality discussion required in these amendments.

These areas include:

- (1) A report describing local air quality conditions, attainment status, and State and Federal air quality and transportation plans;
- (2) A summary of local, district, State, and Federal policies, programs, and regulations to improve air quality;
- (3) A comprehensive set of goals, policies, and objectives to improve air quality; and
- (4) Feasible implementation measures designed to achieve these goals.

To aid agencies in amending their general plans consistent with AB 170, the District has prepared various guidance documents for addressing air quality issues within general plans. These documents also provide links to websites that may provide additional information and detail. These documents are available on-line at the District's website [www.valleyair.org](http://www.valleyair.org).

## **6.3. District Rule 9510 (Indirect Source Review)**

The Indirect Source Review (ISR) rule, which went into effect March 1, 2006, requires developers of larger residential, commercial and industrial projects to reduce smog-forming and particulate emissions generated by their projects. The ISR rule seeks to reduce the growth in NO<sub>x</sub> and PM<sub>10</sub> emissions associated with construction and operation of new development projects in the San Joaquin Valley.

The ISR rule requires developers to reduce construction NO<sub>x</sub> and PM<sub>10</sub> exhaust emissions by 20% and 45%, respectively, and reduce operational NO<sub>x</sub> and PM<sub>10</sub> emissions by 33.3% and 50%, respectively, as compared to the unmitigated baseline. Developers can achieve the required reductions through any combination of District approved on-site emission reduction measures. When a developer cannot achieve the required reductions through on-site measures, off-site mitigation fees are imposed to mitigate the difference between the required emission reductions and the mitigations



achieved on-site. Monies collected from this fee are used by the District to fund emission reduction projects in the San Joaquin Valley on behalf of the project.

For projects subject to District Rule 9510 emission reduction requirements, the District recommends that the environmental analysis reflect the emission reductions that will be achieved through compliance with the rule. It should be noted, that for large projects, compliance with District Rule 9510 may not reduce project specific impacts on air quality to less than significant levels.

Technical resources for District Rule 9510, including a list of approved on-site emission reduction measures and tools for calculating project specific emissions are located on-line at the District's website [www.valleyair.org](http://www.valleyair.org).

#### **6.4. Potential Land Use Conflicts and Exposure of Sensitive Receptors**

The location of a development project is a major factor in determining whether the project will result in localized air quality impacts. The potential for adverse air quality impacts increase as the distance between the source of emissions and receptors decrease. Receptors include sensitive receptors and worker receptors. Sensitive receptors refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses where sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (these sensitive land uses may also be referred to as sensitive receptors). Worker receptors refer to employees and locations where people work. Impacts on sensitive receptors are of particular concern, because they are the people most vulnerable to the effects of air pollution.

From a health risk perspective there are basically two types of land use projects that have the potential to cause long-term public health risk impacts:

- Type A Projects: - Land use projects that will place new toxic sources in the vicinity of existing receptors, and
- Type B Projects: - Land use projects that will place new receptors in the vicinity of existing toxics sources.

#### ***Examples of Type A projects (New project impacts existing receptors):***

- Gasoline dispensing facilities,
- Asphalt batch plants,
- Warehouse distribution centers,
- New freeways or high traffic roads, and
- Other stationary sources that emit toxic substances.



***Examples of Type B projects (New project impacted by existing toxic sources):***

This category includes residential, commercial, and institutional developments proposed to be located in the vicinity of existing toxic emission sources such as:

- Stationary sources,
- Freeways or high traffic roads
- Rail yards, and
- Warehouse distribution centers.

Various tools already exist to perform a screening analysis from stationary sources impacting receptors (Type A projects) as developed for the AB2588 Hot Spots and air district permitting programs. Screening tools may include: prioritization charts, SCREEN3 and various spreadsheets. For projects being impacted by existing sources (Type B projects), one screening tool is contained in the ARB Handbook: *Air Quality and Land Use Handbook: A Community Health Perspective*. The document includes a table (reproduced in this guidance as Table 2 (*Recommendations on Siting New Sensitive Land Uses Such As Residences, Schools, Daycare Centers, Playgrounds, or Medical Facilities*)) with recommended buffer distances associated with various types of common sources. If a proposed project is located within an established buffer distance to any of the listed sources, a health risk screening and/or assessment should be performed to assess risk to potential sensitive receptors.



**Table 2 - Recommendations on Siting New Sensitive Land Uses Such As Residences, Schools, Daycare Centers, Playgrounds, or Medical Facilities\***

| Source Category                      | Advisory Recommendations                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Freeways and high-traffic roads      | 1. Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles per day.                                                                                                                                                                                                                                                                                            |
| Distribution centers                 | 2. Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week).<br>3. Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points. |
| Rail yards                           | 4. Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard.<br>5. Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.                                                                                                                                                                                                                                        |
| Ports                                | 6. Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks                                                                                                                                                                                                                                                |
| Refineries                           | 7. Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.                                                                                                                                                                                                                                                              |
| Chrome platers                       | 8. Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.                                                                                                                                                                                                                                                                                                                                                                        |
| Dry cleaners using perchloroethylene | 9. Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district.<br>10. Do not site new sensitive land uses in the same building with perc dry cleaning operations.                                                                                                                   |
| Gasoline dispensing facilities       | 11. Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.                                                                                                                                                                                                     |



- \* These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.
- \* Recommendations are based primarily on data showing that the air pollution exposures addressed here (i.e., localized) can be reduced as much as 80% with the recommended separation.
- \* The relative risk for these categories varies greatly. To determine the actual risk near a particular facility, a site-specific analysis would be required. Risk from diesel PM will decrease over time as cleaner technology phases in.
- \* These recommendations are designed to fill a gap where information about existing facilities may not be readily available and are not designed to substitute for more specific information if it exists. The recommended distances take into account other factors in addition to available health risk data (see individual category descriptions).
- \* Site-specific project design improvements may help reduce air pollution exposures and should also be considered when siting new sensitive land uses.
- \* This table does not imply that mixed residential and commercial development in general is incompatible. Rather it focuses on known problems like dry cleaners using Perchloroethylene that can be addressed with reasonable preventative actions.
- \* A summary of the basis for the distance recommendations can be found in the ARB Handbook: *Air Quality and Land Use Handbook: A Community Health Perspective*.

Another useful tool is the CAPCOA Guidance Document: *Health Risk Assessments for Proposed Land Use Projects*. CAPCOA prepared the guidance to assist Lead Agencies in complying with CEQA requirements. The guidance document describes when and how a health risk assessment should be prepared and what to do with the results.

If a screening level analysis indicates that toxic air contaminants (TACs) are a concern, the District recommends that a Health Risk Assessment (HRA) be performed. Preparation of an Environmental Impact Report is recommend should the health risk exceed the District's threshold of significance of a carcinogenic risk equal to or greater than ten in one million ( $> 10$  in 1,000,000) or a Hazard Index (HI) equal to or greater than one (1) for non-carcinogenic chronic or acute risk.



# **CHAPTER 7**

# **CALIFORNIA ENVIRONMENTAL QUALITY ACT**

# **CEQA**



## 7.1. Introduction

The California Environmental Quality Act (CEQA) is a state statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. The impetus for CEQA can be traced to the passage of the first federal environmental protection statute in 1969, the National Environmental Policy Act (NEPA). In response to this federal law, the California State Assembly created the Assembly Select Committee on Environmental Quality to study the possibility of supplementing NEPA through state law. This legislative committee, in 1970, issued a report entitled *The Environmental Bill of Rights*, which called for a California counterpart to NEPA. Later that same year, acting on the recommendations of the select committee, the legislature passed, and Governor Reagan signed, the CEQA statute.



CEQA applies to certain activities of state and local public agencies. A public agency must comply with CEQA when it undertakes an activity defined by CEQA as a "project." A project is an activity undertaken by a public agency or a private activity which must receive some discretionary approval (meaning that the agency has the authority to deny the requested permit or approval) from a government agency which may cause either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment.

Most proposals for physical development in California are subject to the provisions of CEQA, as are many governmental decisions which do not immediately result in physical development (such as adoption of a general or community plan). Every development project which requires a discretionary governmental approval will require at least some environmental review pursuant to CEQA, unless an exemption applies.

The CEQA Guidelines are the regulations that explain and interpret the law for both the public agencies required to administer CEQA and for the public generally. They are found in the California Code of Regulations (CCR), in Chapter 3 of Title 14. The Guidelines provide objectives, criteria and procedures for the orderly evaluation of projects and the preparation of environmental impact reports, negative declarations, and mitigated negative declarations by public agencies. The fundamental purpose of the Guidelines is to make the CEQA process comprehensible to those who administer it, to those subject to it, and to those for whose benefit it exists. To that end, the Guidelines are more than mere regulations which implement CEQA as they incorporate and interpret both the statutory mandates of CEQA and the principles advanced by judicial decisions.

The Governor's Office of Planning and Research (OPR) prepares and develops proposed amendments to the Guidelines and transmits them to the Secretary for Resources. The Secretary for Resources is responsible for certification and adoption of the Guidelines and amendments thereto.



CEQA is intended to address a broad range of environmental issues, including water quality, noise, land use, natural resources, transportation, energy, human health, biological species, and air quality. CEQA has six primary objectives:

1. To disclose to decision-makers and the public the significant environmental effects of proposed activities;
2. To identify ways to avoid or reduce environmental adverse environmental impacts;
3. To prevent environmental damage by requiring implementation of all feasible alternatives or mitigation measures;
4. To disclose to the public reasons for agency approvals of projects with significant environmental effects;
5. To foster interagency coordination; and
6. To enhance public participation.

## **7.2. Roles in the CEQA Process**

As a public agency, the District takes an active part in the intergovernmental review process under CEQA. District is available to assist governmental agencies and project proponents in understanding how to characterize project related impacts on air quality and how to reduce or mitigate those impacts. As part of this ongoing effort, the District develops and publishes technical guidance relevant to assessing project specific emissions of criteria pollutants and assessing potential health risks to sensitive receptors.

In carrying out its duties under CEQA, the District may act as a Lead Agency, a Responsible Agency, or a Trustee/“Commenting” Agency. As discussed below, the role the District serves under CEQA is dependent upon the extent of the District’s discretionary approval power over the project.

Succinctly, CEQA applies to discretionary projects. A discretionary project is one that requires the exercise of judgment or deliberation when the public agency or body decides to approve or disapprove a particular activity. Ministerial projects are statutorily exempt from the requirements of CEQA [PRC §21080(b)(1)]. Ministerial projects involve little or no personal judgment by the public official as to the wisdom or manner of carrying out the project. The official merely applies the law to the facts presented but uses no special discretion or judgment in reaching a decision.

“The determination of what is ministerial can most appropriately be made by the particular agency involved based on its analysis of its own laws, and each public agency should make such determinations either as part of its implementing regulations or on a case-by-case basis.” [CCR §15268(a)]. The District has determined that it exercises discretionary judgment when issuing air permits for stationary sources with sufficient emission increases to be subject to Best Available Control Technology (BACT) requirements. For such projects, the District conducts a top-down BACT analysis to determine whether the proposed control technology meets BACT requirements. In making a BACT



determination California Courts (*See, e.g., Security Environmental Systems, Inc. v. South Coast Air Quality Management Dist.*, 229 Cal.App.3d 110, 117-118; 120 (1991)) have found that District staff exercises discretionary judgment in considering the proposed Achieved in Practice control technology, evaluating the feasibility of alternative control technology, and determining whether the alternatives are cost effective. If there is no approved BACT, District staff exercises discretionary judgment in establishing BACT for the particular source category and comparing the newly approved BACT to the proposed control technology.

### 7.3. Lead Agency

A Lead Agency is the public agency with the principal responsibility for carrying out or approving a project subject to CEQA. Lead Agencies are responsible for complying with CEQA by ensuring that all potential environmental impacts of proposed projects are adequately assessed and environmental damage is avoided or minimized where feasible. When determining whether a project will have a significant environmental effect, the Lead Agency must consider the whole of an action and not simply its constituent parts. The Lead Agency must consult with and solicit comments from Responsible and Trustee agencies. In deciding whether changes in a project are feasible, an agency may consider specific economic, environmental, legal, social, and technological factors.

Under CEQA the Lead Agency is required to:

1. Conduct preliminary reviews to determine if applications are subject to CEQA [CCR §15060];
2. Conduct review to determine if projects are exempt from CEQA [CCR §15061];
3. Prepare Initial Studies for projects that may have adverse environmental impacts [CCR §15063];
4. Determine the significance of the environmental effects caused by the project [CCR §15064];
5. Prepare Negative Declarations or Mitigated Negative Declarations for projects with no significant environmental impacts [CCR §15070];
6. Prepare, or contract to prepare, EIRs for projects with significant environmental impacts [CCR §15081];
7. Adopt reporting or monitoring programs for the changes made to projects or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment [PRC §21081.6 & CCR §15097];
8. Comply with CEQA noticing and filing requirements.



## District Role

The District is always the Lead Agency for projects such as the development of District rules and regulations. The District may be Lead Agency for projects subject to District permit requirements. As discussed above, for projects triggering BACT, the District has discretionary approval in deciding how to permit the project. For projects subject to BACT, the District serves as Lead Agency when no other agency has principal responsibility for approving the project. This commonly occurs when the proposed project is a modification to an existing facility and the project does not require discretionary land use approval, such as issuance of a zone change or conditional use permit.

The District is seldom Lead Agency for projects consisting of construction and operation of a new facility, such as a dairy, or glass manufacturing operation. For such projects, the local government agency with jurisdiction over land use, such as a city or county, typically has principal responsibility for approving the project and serves as Lead Agency. An exception is when the land use agency determines that the project is an allowed use and has only ministerial approval power over the project, such as issuance of building permits. This can occur, for example, when the District issues permits for certain oil field projects involving installation of steam generators.

The District is frequently Lead Agency for projects consisting of modifications to existing stationary sources, such as changes in existing procession operations, modifications to existing equipment, or installation of new stationary source equipment. Such projects typically are consistent with existing land uses and are not subject to a discretionary approval by the local land use agency.

## **7.4. Responsible Agency**

A Responsible Agency is a public agency, other than the Lead Agency, that has responsibility for carrying out or approving a project subject to CEQA. The discretionary authority of a Responsible Agency is more limited than a Lead Agency; having responsibility for mitigating or avoiding only the environmental effects of those parts of the project which it decides to approve, carry out, or finance.

Under CEQA a Responsible Agency is required to:

1. Decide on the adequacy of the EIR or Negative Declaration for use by the District [CCR §15096(e)];
2. Consider the environmental effects of the project as shown in the EIR or Negative Declaration [CCR §15096(f)];
3. Adopt feasible alternative or mitigations for the direct or indirect environmental effects of those parts of the project, which it decides to carry out, finance, or approve [CCR §15096(g)];



4. Prepare and submit mitigation monitoring and reporting programs where appropriate [PRC §21081.6 & CCR §15097];
5. Make appropriate findings [CCR §15096(h)]; and
6. File appropriate notices [CCR §15096(i)].

#### District Role

As a Responsible Agency, the District assists Lead Agencies by providing technical expertise in characterizing project related impacts on air quality and identifying potential mitigation measures. When commenting on a Lead Agency's environmental analysis, the District reviews the air quality section of the analysis and other sections relevant to assessing potential impacts on air quality, i.e. sections assessing traffic and public health impacts. At the conclusion of its review, the District may submit comments to the Lead Agency that identify deficiencies in the air quality analysis and may suggest approaches to correct the deficiencies. Where appropriate, the District will recommend feasible mitigation measures.

As discussed above, for projects triggering BACT, the District has discretionary approval in deciding how to permit the project. As such, District staff reviews the Lead Agency's environmental document and considers the environmental effects of the project. When issuing permits for a project that would have a significant environmental effect, the District prepares written findings and files a Notice of Determination, as required under CEQA.

#### **7.5. Trustee/Commenting Agency**

Under CEQA, an agency that has "jurisdiction by law" over a particular natural resource, but does not have discretionary approval power over the project is a "Trustee Agency", otherwise known as a "Commenting Agency". CEQA Guidelines §15004(b)(2) requires a Lead Agency to consult with *"Any other State, Federal, and local agencies which have jurisdiction by law with respect to the project or which exercise authority over resources which may be affected by the project...."*

#### District Role

The District has jurisdiction over most air quality matters in the San Joaquin Valley Air Basin and is tasked with implementing certain programs and regulations required by the Federal Clean Air Act and the California Clean Air Act. Although the District has no statutory authority over land-use, nearly all development projects in the District, from general plans to individual development applications, have the potential to generate pollutants that will worsen air quality or make it more difficult for the District to achieve national and State air quality attainment standards. Therefore, for most development projects, it is necessary for the land-use agency to consult with the District in matters related to air quality impacts.



As a Trustee Agency, the District assists lead agencies by providing technical expertise in characterizing project related impacts on air quality and identifying potential mitigation measures. When commenting on a Lead Agency's environmental analysis, the District reviews the air quality section of the analysis and other sections relevant to assessing potential impacts on air quality, i.e. sections assessing traffic and public health impacts. At the conclusion of its review, the District may submit comments to the Lead Agency that identify deficiencies in the air quality analysis and may suggest approaches to correct the deficiencies. Where appropriate, the District will recommend feasible mitigation measures.

## 7.6. Environmental Review Process

The environmental review process imposes both procedural and substantive requirements. At a minimum, an initial review of the project and its environmental effects must be conducted. Depending on the potential effects, a further, and more substantial, review may be conducted in the form of an environmental impact report (EIR). A project may not be approved as submitted if feasible alternatives or mitigation measures are able to substantially lessen the significant environmental effects of the project.



### "Project" under CEQA

The CEQA Statutes (PRC §21065) define "project" as the whole of an activity, which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and which is any of the following:

1. An activity directly undertaken by a public agency;
2. An activity undertaken by a person which is supported, in whole or in part, through contracts, grants, subsidies, loans, or other forms of assistance from one or more public agencies;
3. An activity that involves the issuance to a person of a lease, permit, license, certificate;
4. Or other entitlement for use by one or more public agencies.

### CEQA "Steps"

An agency will normally take up to three separate steps in deciding which document to prepare for a project subject to CEQA. In the first step the Lead Agency examines the project to determine whether the project is subject to CEQA at all. An activity is not subject to CEQA if:



1. The activity does not involve the exercise of discretionary powers by a public agency;
2. The activity will not result in a direct or reasonably foreseeable indirect physical change in the environment; or
3. The activity is not a project as defined in PRC §21065.

### CEQA “Exemptions”

Once a lead agency has determined that an activity is a project subject to CEQA, a lead agency shall determine whether the project is exempt from CEQA. A project is exempt from CEQA if:

1. The project is exempt by statute (See CCR §15260).
2. The project is exempt pursuant to a categorical exemption (See CCR §15300) and the application of that categorical exemption is not barred by one of the exceptions set forth in CCR §15300.2.
3. The activity is covered by the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.

If the project is exempt, the process does not need to proceed any farther. The agency may prepare a Notice of Exemption. [See: CCR §15061 and §15062].

### CEQA “Initial Study”

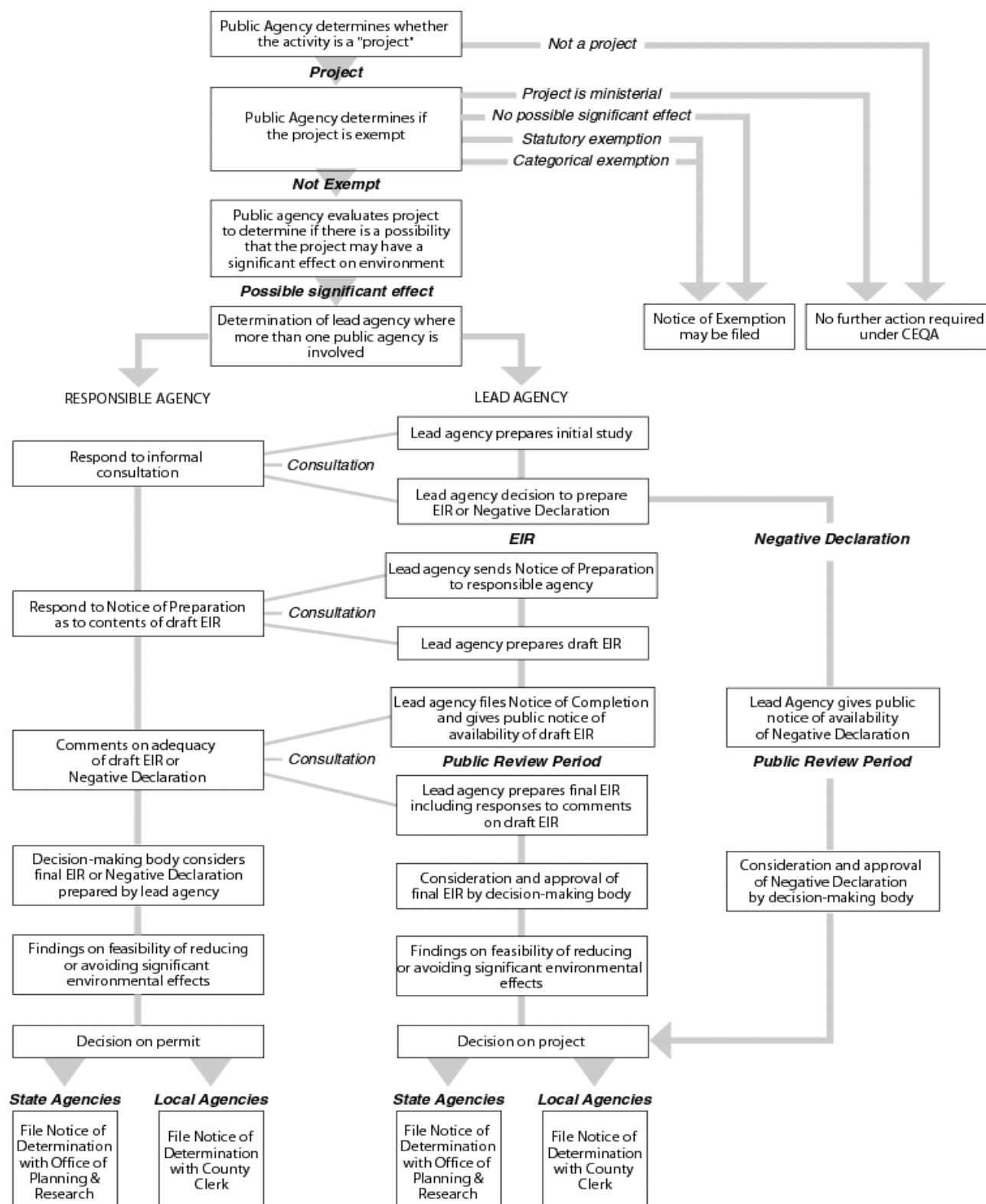
If the project is not exempt, the Lead Agency takes the second step and conducts an Initial Study (See: CCR §15063) to determine whether the project may have a significant effect on the environment. The purposes of an Initial Study are to:

1. Provide the Lead Agency with information to use as the basis for deciding whether to prepare an EIR or a Negative Declaration.
2. Enable an applicant or Lead Agency to modify a project, mitigating adverse impacts before an EIR is prepared, thereby enabling the project to qualify for a Negative Declaration.
3. Assist in the preparation of an EIR, if one is required.

If the Initial Study shows that there is no substantial evidence that the project may have a significant effect, the Lead Agency prepares a Negative Declaration (ND) or a Mitigated Negative Declaration (MND) (See: CCR §15070 et seq.). If the Initial Study shows that the project may have a significant effect, the Lead Agency takes the third step and prepares an EIR [See: CCR §15080 et seq.].



Figure 5 – CEQA Process Flowchart





## 7.7. Consultation with the District

CEQA provides that if a project may have a significant environmental effect the Lead Agency shall either prepare an Initial Study or proceed directly with preparation of an EIR [CCR §15063(a)]. As soon as a Lead Agency has determined that an Initial Study will be required, the Lead Agency shall consult informally with all Responsible Agencies and all Trustee Agencies



responsible for resources affected by the project to obtain recommendations as to whether an EIR or a Negative Declaration should be prepared [CCR §15063(g)]. CEQA guidelines do not specify a time period for the informal consultation period; however, the District recommends lead agencies allow a minimum of ten working days.

In addition to satisfying CEQA requirements, identifying significant air quality impacts and mitigation measures early in the development of a project will allow fundamental design changes for the benefit of air quality at the lowest possible cost. The District invites project proponents, lead agencies, and interested parties to contact District staff or visit the District's Central Region office for consultation on the use of this guidance document or project review.

In addition to total annual emissions of criteria pollutants, the significance of project specific impacts on air quality is influenced by proximity of emission sources to sensitive receptors, frequency and duration of exposure, and the type of pollutant being emitted. Thus, not all projects require the same level of air quality assessment. When consulting with the District, it is imperative that all relevant emission sources be disclosed; permitted (stationary sources) and non-permitted sources (construction, and mobile source emissions), as well as proximity to sensitive receptors.

When provided sufficient project details, District staff's review of potential environmental impacts on air quality include the following determinations:

- ◆ Accuracy of the air quality setting data;
- ◆ Appropriate modeling assumptions;
- ◆ Whether air quality impacts are adequately described;
- ◆ Whether feasible mitigation measures are identified; and
- ◆ Whether the District agrees with the overall conclusions regarding impacts on air quality.



To facilitate District review of the proposed project, the District recommends that a Lead Agency's consultation request includes the following information:

- Complete and accurate project description, including project proponent contact information
- Identification of potential emission sources and potential magnitude including air pollutant emissions resulting from:
  - Construction related activities;
  - Operational activities; and
  - Mobile source activities
- Land use designation
- Project size
- Proximity to sensitive receptors
- Conformance with ARB's *Recommendations on Siting New Sensitive Land Uses*
- A copy of the Lead Agency's Initial Study, if prepared
- Identification of project design elements or potential mitigation measures that would reduce project related impacts on air quality

The consultation process can be further expedited when the Lead Agency or project proponent has conducted a screening level analysis to identify potential impacts on air quality. Lead Agencies are encouraged to use the screening tool presented in Chapter 6, section 6.4 to identify potential conflicts between land use and sensitive receptors and include the result of their analysis in the referral document. The most current screening tools are available on the District's website: [www.valleyair.org](http://www.valleyair.org).

## 7.8. Initial Study

Projects that are subject to CEQA generally undergo a preliminary evaluation in an Initial Study. The Initial Study is used to determine if a project may have a significant effect on the environment. The Initial Study should evaluate the potential impact of a proposed project on air quality. The air quality impact of a project is determined by examining the types and levels of emissions generated by the project, the existing air quality conditions, and neighboring land uses. The Initial Study should analyze all phases of project planning, construction and operation, as well as cumulative impacts. When considering a project's impact on air quality, a lead agency should provide substantial evidence that supports its conclusions in an explicit, quantitative analysis whenever possible.

An initial study may rely upon expert opinion supported by facts, technical studies or other substantial evidence to document its findings. However, an initial study is neither intended nor required to include the level of detail included in an EIR (CCR §15063(a)(3)).



The purposes of an Initial Study are to:

1. Provide the Lead Agency with information to use as the basis for deciding whether to prepare an EIR or a Negative Declaration;
2. Enable an applicant or Lead Agency to modify a project, mitigating adverse impacts before an EIR is prepared, thereby enabling the project to qualify for a Negative Declaration;
3. Assist in the preparation of an EIR, if one is required, by:
  - a. Focusing the EIR on the effects determined to be significant,
  - b. Identifying the effects determined not to be significant,
  - c. Explaining the reasons for determining that potentially significant effects would not be significant, and
  - d. Identifying whether a program EIR, tiering, or another appropriate process can be used for analysis of the project's environmental effects;
4. Facilitate environmental assessment early in the design of a project;
5. Provide documentation of the factual basis for the finding in a Negative Declaration that a project will not have a significant effect on the environment;
6. Eliminate unnecessary EIRs; and
7. Determine whether a previously prepared EIR could be used with the project.

## 7.9. Determining Significance

The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting (See: CCR §15064 et seq.). When evaluating environmental impacts of a project, all project phases must be considered: planning, acquisition, development, and operation.

The decision as to whether a project may have one or more significant effects shall be based on substantial evidence in the record. Substantial evidence shall include facts, reasonable assumptions predicated upon facts and expert opinion supported by facts. Argument, speculation, unsubstantiated opinion or narrative, or evidence that is clearly inaccurate or erroneous, or evidence that is not credible, shall not constitute substantial evidence (CCR §15064(f)(5)). In determining whether a project would have an adverse environmental impact both direct physical changes in the environment and reasonably foreseeable indirect physical changes in the environment, which may be caused by the project shall be considered (CCR §15064(d)).

CEQA Guidelines establish the required content in environmental review documents. However, standards of adequacy for environmental assessments are not precise. Readers should be aware that the adequacy of an assessing significance is influenced by changes in statutes, guidelines, and case law.



“Substantial evidence”, as used in the CEQA guidelines, means enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached. Whether a fair argument can be made that the project may have a significant effect on the environment is to be determined by examining the whole record before the lead agency. Argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly erroneous or inaccurate, or evidence of social or economic impacts, which do not contribute to or are not caused by physical impacts on the environment does not constitute substantial evidence. Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts.

## **7.10. Thresholds of Significance**

A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect. Non-compliance with a threshold of significance means the effect will normally be determined to be significant. Compliance with a threshold of significance means the effect normally will be determined to be less than significant (CCR §15064.7).

Under CEQA, each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects. Thresholds of significance to be adopted for general use as part of the lead agency’s environmental review process must be adopted by ordinance, resolution, rule, or regulation, and developed through a public review process and be supported by substantial evidence. When adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence (CCR §15064.7).

As discussed further in Chapter 8, the District has established thresholds of significance for assessing potential environmental impacts from project specific criteria pollutant and toxic air contaminants. Specific information for assessing significance of project specific impacts on air quality, including screening tools and modeling guidance is available on-line at the District’s website [www.valleyair.org](http://www.valleyair.org). Furthermore, the District maintains a staff of air quality specialists, highly trained in the art of assessing air quality impacts. For large, unusual, or complex projects, the District recommends that lead agencies and project proponents contact the District to discuss project specific details.

The District recommends that other agencies apply these significance thresholds when evaluating project specific impacts on air quality within the San Joaquin Valley. However, it is recognized that the final determination of whether a project would have a significant effect on air quality is ultimately within the purview of the Lead Agency (CCR §15064(c)).



### **7.11. Environmental Checklist – Air Quality Impacts**

The Environmental Checklist Form (Appendix G) of the CEQA Guidelines provides that the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to determine if a project would:

1. Conflict with or obstruct implementation of the applicable air quality plan,
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation,
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors),
4. Expose sensitive receptors to substantial pollutant concentrations, or
5. Create objectionable odors affecting a substantial number of people.

### **7.12. Conflict with or obstruct implementation of the applicable air quality plan?**

The District is tasked with implementing programs and regulations required by the Federal Clean Air Act and the California Clean Air Act. In that capacity, the District has prepared plans to attain Federal and State ambient air quality standards.

As presented in Chapter 8, the District has established thresholds of significance for criteria pollutant emissions, which are based on District New Source Review (NSR) offset requirements for stationary sources. Stationary sources in the District are subject to some of the toughest regulatory requirements in the nation. Emission reductions achieved through implementation of District offset requirements are a major component of the District's air quality plans. Thus, projects with emissions below the thresholds of significance for criteria pollutants would be determined to "Not conflict or obstruct implementation of the District's air quality plan".

Determination of whether a project would exceed the applicable thresholds of significance for criteria pollutants and toxic air contaminants requires quantification of project specific emissions. Specific information for quantifying emissions, including screening tools and modeling guidance is available on-line at the District's website [www.valleyair.org](http://www.valleyair.org).

To streamline the process of assessing significance of criteria pollutant emissions from commonly encountered projects, the District has developed the screening tool, Small Project Analysis Level (SPAL). Using project type and size, the District has pre-quantified emissions and determined a size below which it is reasonable to conclude that a project would not exceed applicable thresholds of significance for criteria pollutants. A list of Small Project Analysis Level (SPAL) is available on the District's website.



Project size, as identified in the SPAL, is not a threshold of significance. SPAL is a screening tool. The Lead Agency has the responsibility to identify and avoid potential land use conflicts, such as potential exposure of sensitive receptors to sources of toxic air contaminants, sources of hazardous materials, and potential odors. A more complete discussion of potential land use conflicts and exposure of sensitive receptors is presented in Chapter 6.

### **7.13. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?**

Determination of whether project emissions would violate any ambient air quality standard is largely a function of air quality dispersion modeling. If project emissions would not exceed State and Federal ambient air quality standards at the project's property boundaries, the project would be considered to not violate any air quality standard or contribute substantially to an existing or projected air quality violation.

The need to perform air quality dispersion modeling for typical urban development projects is infrequent, and should be determined on a case-by-case basis, depending on project size. Industrial and large commercial projects may need to conduct air dispersion modeling. The District recommends that an ambient air quality analysis be performed when emissions of any criteria pollutant would equal or exceed any applicable Threshold of Significance for criteria pollutants, or 100 pounds per day of any criteria pollutant.

If such modeling is found necessary, the project consultant should check with the District to determine the appropriate model and input data to use in the analysis. Specific information for assessing significance, including screening tools and modeling guidance is available on-line at the District's website [www.valleyair.org](http://www.valleyair.org).

### **7.14. Result in a cumulatively considerable net increase of any criteria pollutant?**

CEQA defines cumulative impacts as two or more individual effects which, when considered together, are either significant or "cumulatively considerable", meaning they add considerably to a significant environmental impact. An adequate cumulative impact analysis considers a project over time and in conjunction with other past, present, and reasonably foreseeable future projects whose impacts might compound those of the project being assessed.

By its very nature, air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development. Future attainment of State and Federal ambient air quality standards is a function of successful implementation of the District's attainment plans. Consequently, the District's application of thresholds of significance for criteria pollutants is relevant to the determination of whether a project's individual emissions would have a cumulatively significant impact on air quality.



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 [CCR §15064(h)(1)]. Thus, if project specific emissions would be less than the thresholds of significance for criteria pollutants the project would not be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the District is in non-attainment under applicable Federal or State ambient air quality standards.

#### **7.15. Expose sensitive receptors to substantial pollutant concentrations?**

Determination of whether project emissions would expose sensitive receptors to substantial pollutant concentrations is a function of assessing potential health risks. If the health risk exceeds the District's threshold of significance of a carcinogenic risk equal to or greater than ten in one million ( $> 10$  in 1,000,000) or a Hazard Index (HI) equal to or greater than one (1) for non-carcinogenic chronic or acute risk, the project should be concluded to expose sensitive receptors to substantial pollutant concentrations.

#### **7.16. Create objectionable odors affecting a substantial number of people?**

Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, there are no quantitative or formulaic methodologies to determine the presence of a significant odor impact. Rather, the District recommends that odor analyses strive to fully disclose all pertinent information.

The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The District has identified some common types of facilities that have been known to produce odors in the San Joaquin Valley. These are presented in Chapter 8 (Table 7 - Screening Levels for Potential Odor Sources), along with a reasonable distance from the source within which, the degree of odors could possibly be significant.



## **7.17. Notice of Intent to Adopt a Negative or Mitigated Negative Declaration**

A negative declaration (ND) or mitigated negative declaration (MND) for a project subject to CEQA shall be prepared when:

1. There is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or
2. Revisions in the project plans or proposals made by, or agreed to by the applicant would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and there is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment (CCR §15070).

CEQA Guidelines require the Lead Agency to provide a Notice of Intent to Adopt a negative declaration or mitigated negative declaration to the public, responsible agencies, trustee agencies, and the county clerk of each county within which the proposed project is located (CCR §15072 (a)). At a minimum, the comment period for proposed negative or mitigated negative declarations is 20-days (CCR §15073 (a)). When a proposed negative declaration or mitigated negative declaration and initial study are submitted to the State Clearinghouse for review by State agencies, the public review period shall not be less than 30 days (CCR §15073 (a)).

The basic information required by CEQA Guidelines §15071 consists of:

- A brief description of the project, including a commonly used name for the project, if any;
- The location of the project, preferably shown on a map, and the name of the project proponent;
- A proposed finding that the project will not have a significant effect on the environment;
- An attached copy of the Initial Study documenting reasons to support the finding; and
- Mitigation measures, if any, included in the project to avoid potentially significant effects.

In addition to the basic information required by CEQA, the District recommends that it be provided with copies of all technical analyses that relate to air quality, including but not limited to traffic analyses, growth impact projections, health risk assessments, sensitive receptor locations, characterization of construction related emissions, and characterization of stationary and area source emissions.

To facilitate the District's assessment of the adequacy of the determination that a project would not result in a significant impact on air quality the District recommends that it be provided with copies, in electronic format, of all supporting modeling files for risk assessments and characterization of criteria pollutant emissions.



## **7.18. Notice of Preparation of Environmental Impact Report**

Within established exceptions, a Lead Agency shall prepare an Environmental Impact Report (EIR) if there is substantial evidence that any aspect of a project, either individually or cumulatively, may cause a significant effect on the environment, regardless of whether the overall effect of the project is adverse or beneficial (CCR §15063(b)(1)). Upon determination to prepare an EIR, the Lead Agency shall provide each Responsible and Trustee Agency a Notice of Preparation (NOP) stating that an EIR will be prepared. The Lead Agency may begin work on the draft EIR immediately without awaiting responses to the Notice of Preparation. However, the draft EIR cannot be circulated until after the close of the 30-day comment period for the NOP has closed.

A Notice of Preparation shall provide Responsible and Trustee Agencies with sufficient information describing the project and the potential environmental effects to enable the Responsible Agencies to make a meaningful response. At a minimum, the Notice of Preparation shall include a description of the project, identify the project location, and identify probable environmental effects (CCR §15082).

The District recommends that in addition to the basic information required by CEQA, the Notice of Preparation include relevant information concerning proximity to sensitive receptors, and proximity to existing emission sources.

## **7.19. Disclosure of Significant Environmental Impacts**

Disclosure of environmental impacts should include relevant specifics of the area, resources involved, physical changes, alterations to ecological systems, changes induced in population distribution, population concentration, and the human use of the land (including commercial and residential development). Health and safety problems caused by the physical changes shall also be discussed (CCR §15126.2).

Project specific air pollutant emissions can result from both construction and operational activities. Specific sources of air pollution emissions include on-road and off-road motor vehicles, off-road equipment, natural gas and electricity usage, architectural coatings and solvents, fugitive emissions, area source emissions, and emissions from various commercial and industrial operations. The environmental assessment should discuss air quality impacts from all identifiable emission sources.

The environmental review should also analyze any significant environmental effects the project might cause by bringing development and people into the area affected. For example, an Environmental Impact Report (EIR) on a subdivision that would locate residences in close proximity to a source of toxic air contaminants (TACs), such as a freeway, should identify the health risk hazard to future occupants of the subdivision. Please consult section 6.4 *Potential Land Use Conflicts and Exposure of Sensitive*



*Receptors* for a detailed discussion regarding assessing both Type A (New project impacts existing receptors) and Type B (New project impacted by existing toxic sources) projects.

To assist lead agencies in assessing project specific impacts on air quality, the Air Quality Section of Appendix G of the CEQA Guidelines (*Environmental Checklist Form*) contains a list of air quality effects that may be deemed potentially significant. These are:

1. Conflict with or obstruct implementation of the applicable air quality plan;
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standards (including releasing emissions which exceed quantitative thresholds for ozone precursors);
4. Expose sensitive receptors to substantial pollutant concentrations; or
5. Create objectionable odors affecting a substantial number of people.

For some impacts listed above, the criteria to be applied are straight forward, but for others, interpretation is required. To bring consistency to the process of analyzing project specific impacts on air quality and to assist lead agencies in preparing environmental assessments which meet the standards of adequacy as established under CEQA, the District has developed various screening tools to streamline the process of determining if a project has the potential to exceed District adopted thresholds of significance. The most current screening tools are available on the District's website: [www.valleyair.org](http://www.valleyair.org).

## **7.20. Consideration and Discussion of Mitigation Measures**

CEQA establishes a duty for public agencies to avoid or minimize environmental damage where feasible. A public agency should not approve a project as proposed if there are feasible alternatives or mitigation measures available that would substantially lessen any significant effects that the project would have on the environment. Mitigation measures are not required for effects which are not found to be significant (CCR §15126.4(a)(3)). Mitigation measures must be fully enforceable through permit conditions, agreements, or other legally binding instruments. In the case of the adoption of a plan, policy, regulation, or other public project, mitigation measures can be incorporated into the plan, policy, regulation, or project design (CCR §15126.4(a)(2)).

Mitigation includes:

1. Avoiding the impact altogether by not taking a certain action or parts of an action;
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation;



3. Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment;
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
5. Compensating for the impact by replacing or providing substitute resources or environments.

In deciding whether changes in a project are feasible, an agency may consider specific economic, environmental, legal, social, and technological factors (CCR §15021). When considering alternatives and mitigation measures, a Responsible Agency is more limited than a Lead Agency. A Responsible Agency has responsibility for mitigating or avoiding only the direct or indirect environmental effects of those parts of the project which it decides to carry out, finance, or approve (CCR §15096(g)).

## **7.21. Land Use Strategies**

Since its inception, the San Joaquin Valley Air Pollution Control District (District) has been active in promoting land use strategies that reduce the amount and distance people drive to accomplish their daily activities. Air districts with severe air pollution were required by the California Clean Air Act to develop "indirect source" control programs in their attainment plans. Indirect sources are defined as any building, facility, activity center, etc. that attracts motor vehicle trips. Land use strategies reduce trips by designing development to be more convenient for walking, bicycling, and transit, thereby allowing people to drive less.

The District's Air Quality Attainment Plans include measures to promote air quality elements in county and city general plans as one of the primary indirect source programs. The general plan is the primary long range planning document used by cities and counties to direct development. Since air districts have no authority over land use decisions, it is up to cities and counties to ensure that their general plans help achieve air quality goals. Section 65302.1 of the California Government Code requires cities and counties in the San Joaquin Valley to amend appropriate elements of their general plans to include data, analysis, comprehensive goals, policies, and feasible implementation strategies to improve air quality in their next housing element revisions.

The Air Quality Guidelines for General Plans (AQGGP), adopted by the District in 1994 and amended in 2005, is a guidance document containing goals and policy examples that cities and counties may want to incorporate into their General Plans to satisfy Section 65302.1. When adopted in a general plan and implemented, the suggestions in the AQGGP can reduce vehicle trips and miles traveled and improve air quality. The specific suggestions in the AQGGP are voluntary. The District strongly encourages cities and counties to use their land use and transportation planning authority to help achieve air quality goals by adopting the suggested policies and programs.



## 7.22. Fleet Improvement Mitigation Measures

Mobile sources are a major contributor to project specific impacts on air quality. The following measures can be effective in mitigating mobile source impacts:

- 1) Replace diesel fleet with alternative fuel engine technology and infrastructure;
- 2) Retrofit existing equipment to reduce emissions using methods such as particulate filters, oxidation catalysts, or other approved technologies;
- 3) Adopt a Vehicle Idling Policy requiring all vehicles under company control to adhere to a 5 minute idling policy;
- 4) Repower/Retrofit heavy-duty diesel fleet with cleaner diesel engine technology and/or diesel particulate filter after-treatment technology;
- 5) Replace auxiliary power units with cleaner engine technology, alternative fuels, or require electric connection while at loading docks;
- 6) Replace diesel fleet vehicles with cleaner fueled low emission vehicles (i.e. school buses, buses, on- and off- road heavy duty vehicles, lighter duty trucks and passenger vehicles)

## 7.23. Voluntary Emission Reduction Agreements

Design elements and compliance with District rules and regulations may not be sufficient to reduce project related impacts on air quality to a less than significant level. In such situations, project proponents may enter into a Voluntary Emission Reduction Agreement (VERA) with the District. A VERA is a mitigation measure by which the project proponent provides pound-for-pound mitigation of air emissions increases through a process that develops, funds, and implements emission reduction projects, with the District serving a role of administrator of the emissions reduction projects and verifier of the successful mitigation effort. To implement a VERA, the project proponent and the District enter into a contractual agreement in which the project proponent agrees to mitigate project specific emissions by providing funds for the District's Emission Reduction Incentive Program (ERIP). The funds are disbursed by ERIP in the form of grants for projects that achieve emission reductions. Thus, project specific impacts on air quality are mitigated. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of old farm tractors.

In implementing a VERA, the District verifies the actual emission reductions that have been achieved as a result of completed grant contracts, monitors the emission reduction projects, and ensures the enforceability of achieved reductions. The





initial agreement is generally based on the projected maximum emissions increases as calculated by a District approved air quality impact assessment, and contains the corresponding maximum fiscal obligation. However, because the goal is to mitigate actual emissions, the District has designed flexibility into the VERA such that the final mitigation is based on actual emissions related to the project as determined by actual equipment used, hours of operation, etc. After the project is mitigated, the District certifies to the lead agency that the mitigation is completed, providing the lead agency with an enforceable mitigation measure demonstrating that project specific emissions have been mitigated to less than significant.

At the time of this writing, the District had entered into approximately seventeen VERAs with developers since 2005. It is the District's experience that implementation of a VERA is a feasible mitigation measure, which effectively achieves the emission reductions required by a lead agency, including mitigation of project related impacts on air quality to a net zero level by supplying real and contemporaneous emissions reductions.

#### **7.24. Compliance with District Rules and Regulations**

The District recommends that any air quality assessment reflect emission reductions achieved through compliance with District rules and regulations. In general, a regulation is a collection of rules, each of which deals with a specific topic. For example, Regulation II (Permits) deals with permitting emission sources and includes rules such as District permit requirements (Rule 2010), New and Modified Stationary Source Review (Rule 2201), and implementation of Emission Reduction Credit Banking (Rule 2301). Current District rules can be found online at: [www.valleyair.org/rules/1ruleslist.htm](http://www.valleyair.org/rules/1ruleslist.htm).

#### **7.25. District Regulation II (Permits)**

Regulation II (Permits) deals with permitting emission sources and includes rules such as District permit requirements (Rule 2010), New and Modified Stationary Source Review (Rule 2201), and implementation of Emission Reduction Credit Banking (Rule 2301). District Regulation II ensures that stationary source emissions will be reduced or mitigated to below the District's significance thresholds. However, the Lead Agency can, and should, make an exception to this determination if special circumstances suggest that the emissions from any permitted or exempt source may cause a significant air quality impact. For example, if a source may emit objectionable odors, then odor impacts on nearby receptors should be considered a potentially significant air quality impact.

To meet the standards for adequacy for disclosure of potential environmental impacts and mitigation, the District recommends that the lead agency's environmental document include a qualitative assessment of stationary source impacts on air quality. The District recommends that the narrative include an operational statement identifying project specific stationary sources and their respective criteria pollutant emissions. The discussion should include sufficient detail of the District's permitting process to provide



decision makers and the public with information enabling them to make an informed decision regarding the environmental consequences of criteria pollutant emissions from stationary sources.

It should be noted that not all emission sources i.e. mobile source emissions are subject to District permit requirements. Therefore, the Lead Agency's analysis of air quality impacts should evaluate both construction and operational activities involving mobile source emissions and localized impacts such as health risks to sensitive receptors from toxic air contaminants, odors, and pollutant hot spots.

## **7.26. District Regulation IV (Prohibitions)**

District Regulation IV (Prohibitions) is comprised of prohibitory rules that are written to achieve emission reductions from specific source categories or from all sources. These rules are applicable to existing sources (retrofit requirements) as well as new sources. Examples of source specific prohibitory rules include 4570 (Confined Animal Facilities), Rule 4623 (Storage of Organic Liquids), and Rule 4901 (Wood burning Fireplaces and Wood Burning Heaters). The above list of rules is neither exhaustive nor exclusive. Within the environmental assessment, it is not necessary to identify all prohibitory rules that would apply to a specific project. However, applicants are encouraged to contact the District's Small Business Assistance Office to identify District rules or regulations that apply to the project or to obtain information about District permit requirements. By phone at: Fresno (559) 230-5888; Bakersfield (661) 392-5665; Modesto (209) 557-6446.

## **7.27. District Regulation VIII (Fugitive PM<sub>10</sub> Prohibition)**

The purpose of Regulation VIII (Reg. VIII) is to reduce ambient concentrations of fine particulate matter (PM<sub>10</sub>) by requiring actions to prevent, reduce or mitigate anthropogenic fugitive dust emissions. Reg. VIII requires property owners, contractors, developers, equipment operators, farmers and public agencies to control fugitive dust emissions from specified outdoor fugitive dust sources, including:

- Construction sites
- Excavation and earthmoving
- Bulk material handling, storage and transport
- Vacant land
- Paved and unpaved roads
- Unpaved vehicle traffic areas





Regulation VIII specifies the following measures to control fugitive dust:

- Apply water to unpaved surfaces and areas
- Use non-toxic chemical or organic dust suppressants on unpaved roads and traffic areas
- Limit or reduce vehicle speed on unpaved roads and traffic areas
- Maintain areas in a stabilized condition by restricting vehicle access
- Install wind barriers
- During high winds, cease outdoor activities that disturb the soil.
- Keep bulk materials sufficiently wet when handling
- Store and handle materials in a three-sided structure
- When storing bulk materials, apply water to the surface or cover the storage pile with a tarp
- Don't overload haul trucks. Overloaded trucks are likely to spill bulk materials
- Cover haul trucks with a tarp or other suitable cover. Or, wet the top of the load enough to limit visible dust emissions
- Clean the interior of cargo compartments on emptied haul trucks prior to leaving a site
- Prevent trackout by installing a trackout control device
- Clean up trackout at least once a day. If along a busy road or highway, clean up trackout immediately
- Monitor dust-generating activities and implement appropriate measures for maximum dust control



For projects in which construction related activities would disturb equal to or greater than 1-acre of surface area, the District recommends that demonstration of receipt of a District approved Dust Control Plan or Construction Notification form, before issuance of the first grading permit, be made a condition of project approval.

It should be noted that although compliance with District Regulation VIII substantially reduces project specific fugitive dust emissions, it may not be sufficient to reduce project specific emissions to less than significant levels. Furthermore, District Regulation VIII does not reduce construction exhaust emissions.



## 7.28. District Rule 9510 (Indirect Source Review)

District Rule 9510 (ISR) is intended to reduce a project's impact on air quality through project design elements or mitigation by payments of applicable off-site mitigation fees. Compliance with Rule 9510 will reduce construction exhaust NO<sub>x</sub> and PM<sub>10</sub> emissions by 20 percent and 45 percent respectively. Compliance with Rule 9510 will reduce operational emissions of NO<sub>x</sub> and PM<sub>10</sub> emissions by 33.3 percent and 50 percent respectively.



Individual development projects would be subject to ISR requirements if upon full build-out the project would include or exceed any one of the following:

1. 50 dwelling units
2. 2,000 square feet of commercial space;
3. 25,000 square feet of light industrial space;
4. 100,000 square feet of heavy industrial space;
5. 20,000 square feet of medical office space;
6. 39,000 square feet of general office space; or
7. 9,000 square feet of educational space; or
8. 10,000 square feet of government space; or
9. 20,000 square feet of recreational space; or
10. 9,000 square feet of space not identified above

The ISR rule applies to any transportation or transit project where construction exhaust emissions equal or exceed two (2.0) tons NO<sub>x</sub> or two (2.0) tons of PM<sub>10</sub>.

For projects subject to District Rule 9510, the District recommends that demonstration of compliance with District Rule 9510, including payment of all applicable fees before issuance of the first building permit, be made a condition of project approval. Information about how to comply with District Rule 9510 can be found on the District's website at: [www.valleyair.org/ISR/ISRHome.htm](http://www.valleyair.org/ISR/ISRHome.htm).

It should be noted that although compliance with District Rule 9510 substantially reduces project specific impacts on air quality, it may not be sufficient to reduce project specific emissions to less than significant levels.

## 7.29. District Rule 9410 (Employer Based Trip Reduction)

The eTRIP Rule (Rule 9410, Employer Based Trip Reduction), requires larger employers to establish an Employer Trip Reduction Implementation Plan (eTRIP) to encourage employees to reduce single-occupancy vehicle trips, thus reducing emissions of oxides of nitrogen (NO<sub>x</sub>), volatile organic compounds (VOC) and particulate matter (PM). Detailed information regarding the eTrip rule can be found using the following link: [www.valleyair.org/tripreduction.htm](http://www.valleyair.org/tripreduction.htm).



### **7.30. CEQA Streamlining**

The District encourages Lead Agencies to use the streamlining opportunities provided within CEQA. The use of master EIRs, tiered EIRs, subsequent EIRs/Negative Declarations, etc. allows Lead Agencies to focus on regional and general air quality impacts early in the planning process. However, project specific impacts, particularly potential risks to sensitive receptors, cannot be fully assessed until later in the process when project specific details are known. A project that is ordinarily insignificant in its impact on the environment may, in a particularly sensitive environment, be significant. CEQA provides that a categorical exemption shall not be used for an activity where there is a reasonable possibility that the activity will have a significant effect on the environment due to unusual circumstances (CCR §15300.2(c)). Therefore, the District recommends that projects which would normally be approved, based on a previously approved environmental document, be screened to identify potential land use conflicts with sensitive receptors.

### **7.31. Relationship between CEQA and NEPA**

Some projects subject to CEQA may also require compliance under Federal environmental law, namely the National Environmental Policy Act (NEPA). In such cases, a joint NEPA-CEQA analysis may be appropriate. Under certain circumstances, the CEQA Guidelines allow public agencies to use a NEPA document rather than prepare a Negative Declaration, Mitigated Negative Declaration or Environmental Impact Report. In general, NEPA differs from CEQA in that it does not require a separate discussion of mitigation measures, or growth inducing impacts. These points of analysis need to be added before an Environmental Impact Statement (EIS) required under NEPA can be used as an EIR. If the NEPA and CEQA lead agencies will not be combining documents into one, the District recommends that the consultation notices for each document reference the other agency's contact information, including contact name and phone number.

This guidance document can also be used to prepare a NEPA or joint CEQA-NEPA analysis, unless noted otherwise. See PRC §§21083.5, 21083.6, and 21083.7 and CCR §§15220 - 15228 for more information on combined EIR-EIS projects



## CHAPTER 8

# ASSESSING AIR QUALITY IMPACTS

DRAFT



## 8.1. Introduction

This chapter provides general guidance on assessing significance of project related impacts on air quality. Specific information for assessing significance, including screening tools and modeling guidance is available on-line at the District's website [www.valleyair.org](http://www.valleyair.org). Furthermore, the District maintains a staff of air quality specialists, highly trained in the art of assessing air quality impacts. For large, unusual, or complex projects, the District recommends that lead agencies and project proponents contact the District to discuss project specific details.

## 8.2. Thresholds of Significance for Modeling Ambient Air Quality

State and Federal ambient air quality standards have been established to protect public health and welfare from the adverse impacts of air pollution. A project would be considered to have a significant impact if its emissions are predicted to cause or contribute to a violation of any California Ambient Air Quality Standard (CAAQS) / National Ambient Air Quality Standard (NAAQS).

The District concludes that use of the CAAQS/NAAQS to establish thresholds of significance under CEQA Guidelines §15064.7 is appropriate. In addition, using those standards promotes consistency in assessing significance of project specific impacts within the environmental review process. CAAQS/NAAQS are presented in Table 3 (*Ambient Air Quality Standards*). Because of scientific advancements and potential changes in attainment status, CAAQS/NAAQS are subject to change. Revisions to CAAQS/NAAQS thresholds are automatically adopted upon promulgation by the state of California and/or the Federal government. The most current thresholds of significance are available online at <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>.



**Table 3 - Ambient Air Quality Standards**

| Table 3 - Ambient Air Quality Standards     |                         |                                   |                                                        |                                             |                          |                                                                     |
|---------------------------------------------|-------------------------|-----------------------------------|--------------------------------------------------------|---------------------------------------------|--------------------------|---------------------------------------------------------------------|
| Pollutant                                   | Averaging Time          | California Standards <sup>1</sup> |                                                        | National Standards <sup>2</sup>             |                          |                                                                     |
|                                             |                         | Concentration <sup>3</sup>        | Method <sup>4</sup>                                    | Primary <sup>3,5</sup>                      | Secondary <sup>3,6</sup> | Method <sup>7</sup>                                                 |
| Ozone (O3)                                  | 1 Hour                  | 0.09 ppm (180 µg/m³)              | Ultraviolet Photometry                                 | --                                          | Same as Primary Standard | Ultraviolet Photometry                                              |
|                                             | 8 Hour                  | 0.070 ppm (137 µg/m³)             |                                                        | 0.075 ppm (147 µg/m³)                       |                          |                                                                     |
| Respirable Particulate Matter (PM10)        | 24 Hour                 | 50 µg/m³                          | Gravimetric or Beta Attenuation                        | 150 µg/m³                                   | Same as Primary Standard | Inertial Separation and Gravimetric Analysis                        |
|                                             | Annual Arithmetic Mean  | 20 µg/m³                          |                                                        | --                                          |                          |                                                                     |
| Fine Particulate Matter (PM2.5)             | 24 Hour                 | --                                | Gravimetric or Beta Attenuation                        | 35 µg/m³                                    | Same as Primary Standard | Inertial Separation and Gravimetric Analysis                        |
|                                             | Annual Arithmetic Mean  | 12 µg/m³                          |                                                        | 15 µg/m³                                    |                          |                                                                     |
| Carbon Monoxide (CO)                        | 1 Hour                  | 20 ppm (23 mg/m³)                 | Non-Dispersive Infrared Photometry (NDIR)              | 35 ppm (40 mg/m³)                           | --                       | Non-Dispersive Infrared Photometry (NDIR)                           |
|                                             | 8 Hour                  | 9.0 ppm (10 mg/m³)                |                                                        | 9 ppm (10 mg/m³)                            | --                       |                                                                     |
|                                             | 8 Hour (Lake Tahoe)     | 6 ppm (7 mg/m³)                   |                                                        | --                                          | --                       |                                                                     |
| Nitrogen Dioxide (NO2) <sup>8</sup>         | 1 Hour                  | 0.18 ppm (339 µg/m³)              | Gas Phase Chemiluminescence                            | 100 ppb (188 µg/m³)                         | --                       | Gas Phase Chemiluminescence                                         |
|                                             | Annual Arithmetic Mean  | 0.030 ppm (57 µg/m³)              |                                                        | 53 ppb (100 µg/m³)                          | Same as Primary Standard |                                                                     |
| Sulfur Dioxide (SO2) <sup>9</sup>           | 1 Hour                  | 0.25 ppm (655 µg/m³)              | Ultraviolet Fluorescence                               | 75 ppb (196 µg/m³)                          | --                       | Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method) |
|                                             | 3 Hour                  | --                                |                                                        | --                                          | 0.5 ppm (1300 µg/m³)     |                                                                     |
|                                             | 24 Hour                 | 0.04 ppm (105 µg/m³)              |                                                        | 0.14 ppm (for certain areas) <sup>9</sup>   | --                       |                                                                     |
|                                             | Annual Arithmetic Mean  | --                                |                                                        | 0.030 ppm (for certain areas) <sup>9</sup>  | --                       |                                                                     |
| Lead <sup>10,11</sup>                       | 30 Day Average          | 1.5 µg/m³                         | Atomic Absorption                                      | --                                          | --                       | High Volume Sampler and Atomic Absorption                           |
|                                             | Calendar Quarter        | --                                |                                                        | 1.5 µg/m³ (for certain areas) <sup>11</sup> | Same as Primary Standard |                                                                     |
|                                             | Rolling 3-Month Average | --                                |                                                        | 0.15 µg/m³                                  |                          |                                                                     |
| Visibility Reducing Particles <sup>12</sup> | 8 Hour                  | See footnote 12                   | Beta Attenuation and Transmittance through Filter Tape | No National Standard                        |                          |                                                                     |
| Sulfates                                    | 24 Hour                 | 25 µg/m3                          | Ion Chromatography                                     |                                             |                          |                                                                     |
| Hydrogen Sulfide                            | 1 Hour                  | 0.03 ppm (42 µg/m³)               | Ultraviolet Fluorescence                               |                                             |                          |                                                                     |
| Vinyl Chloride <sup>10</sup>                | 24 Hour                 | 0.01 ppm (26 µg/m³)               | Gas Chromatography                                     |                                             |                          |                                                                     |



1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
  2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM<sub>10</sub>, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m<sup>3</sup> is equal to or less than one. For PM<sub>2.5</sub>, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
  3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
  4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
  5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
  6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
  7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
  8. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.
  9. On June 2, 2010, a new 1-hour SO<sub>2</sub> standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO<sub>2</sub> national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
- Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
10. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
  11. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m<sup>3</sup> as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
  12. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.



### 8.3. Thresholds of Significance - Toxic Air Contaminant Emissions

Toxic pollutants in California are identified as toxic air contaminants (TACs) as defined by California Health & Safety Code (CH&SC) §44321 and are listed in the AB2588 Air Toxic “Hot Spots” and Assessment Act’s “Emissions Inventory Criteria and Guideline Regulation” document in Appendices AI and AII. Potential health impacts from TACs are generally categorized into two groups

- 1) Carcinogenic (cancer causing) effects; and
- 2) Non-carcinogenic (non-cancer causing) effects.

The non-carcinogenic effects can be further broken down into long-term (chronic) health effects such as birth defects, neurological damage, or genetic damage and short-term (acute) effects such as eye irritation, respiratory irritation, and nausea. The California TAC list identifies about 700 plus pollutants. A subset of these pollutants have been listed by the Office of Environmental Health Hazard Assessment (OEHHA) as having carcinogenic and/or non-carcinogenic effects, as defined by CH&SC §44360.

**Please note:** Toxic pollutants used in determining the potential exposure to the public should not be confused with the 189 Hazardous Air Pollutants (HAP) listed by EPA in the Clean Air Act.

The Air Toxics “Hot Spots” Information and Assessment Act provides two methods for determining the exposure to the public from TACs. The first method is a called a prioritization which is considered a screening method and the second is a health risk assessment.

#### 8.3.1. Prioritization Methodology

The prioritization methodology has two basic procedures that can be used to determine a project’s potential impact on nearby receptors.

The first method is the “Emissions and Potency” method which relies on the quantity of a specific pollutant and the pollutants specific potency (tendency to cause harm) in conjunction with the distance a source is from a receptor to calculate a score or potential for exposure.

The second method, “Dispersion Adjustment”, is similar to the first method except that the stack height is also included as a parameter in the calculations to derive the prioritization score.



Both prioritization methodologies look at three aspects of risk:

- 1) Acute short term non-carcinogenic risk [1-24 hours],
- 2) Chronic long term non-carcinogenic risk [24 hours to 1 year], and
- 3) Non-carcinogenic or carcinogenic (cancer) risk over a 70 year period. The prioritization guidance document can be downloaded from ARB at <http://www.arb.ca.gov/ab2588/RRAP-IWRA/priguide.pdf>.

The District concludes that use of a prioritization score to evaluate project specific health risks under CEQA Guidelines §15064.7 is appropriate. In addition, this method streamlines the process of determining significance and promotes consistency within the environmental review process. Once a prioritization score exceeds the applicable thresholds of significance, the District requires that a health risk assessment be conducted.

| <b>Table 4</b><br><b>*Prioritization Thresholds of Significance</b> |                                                                   |
|---------------------------------------------------------------------|-------------------------------------------------------------------|
| Carcinogens                                                         | Prioritization Score equal to or greater than 10.0 in one million |
| Non-Carcinogens                                                     | Prioritization Score equal to or greater than 1.0 in one million  |

*\*The most commonly used value or "Prioritization Score" for determining if a project needs to be analyzed further is 10. A carcinogenic score of 10 conservatively represents a potential exposure of 10 in one million*

### **8.3.2. Health Risk Assessment (HRA)**

The second method under the Air Toxics "Hot Spots" Information and Assessment Act is a Health Risk Assessment (HRA).

The HRA method has two options. The first option is a screening model (AERSCREEN) that uses conservative modeling assumptions to estimate impacts or it may be a spreadsheet that was derived from a screening/refined model using conservative assumptions.

The second option is to use a refined model which will require more resources and time. This is due to the project specific information required to perform a given modeling run.



The determination of which option is used will mainly be based on the following:

1. Is there a screening method available for the scenario under review?
2. Is the conservative screening method acceptable to the reviewing agency?
3. Is the meteorological data used to develop the screening method acceptable?
4. Are the source parameters used in the screening method acceptable?

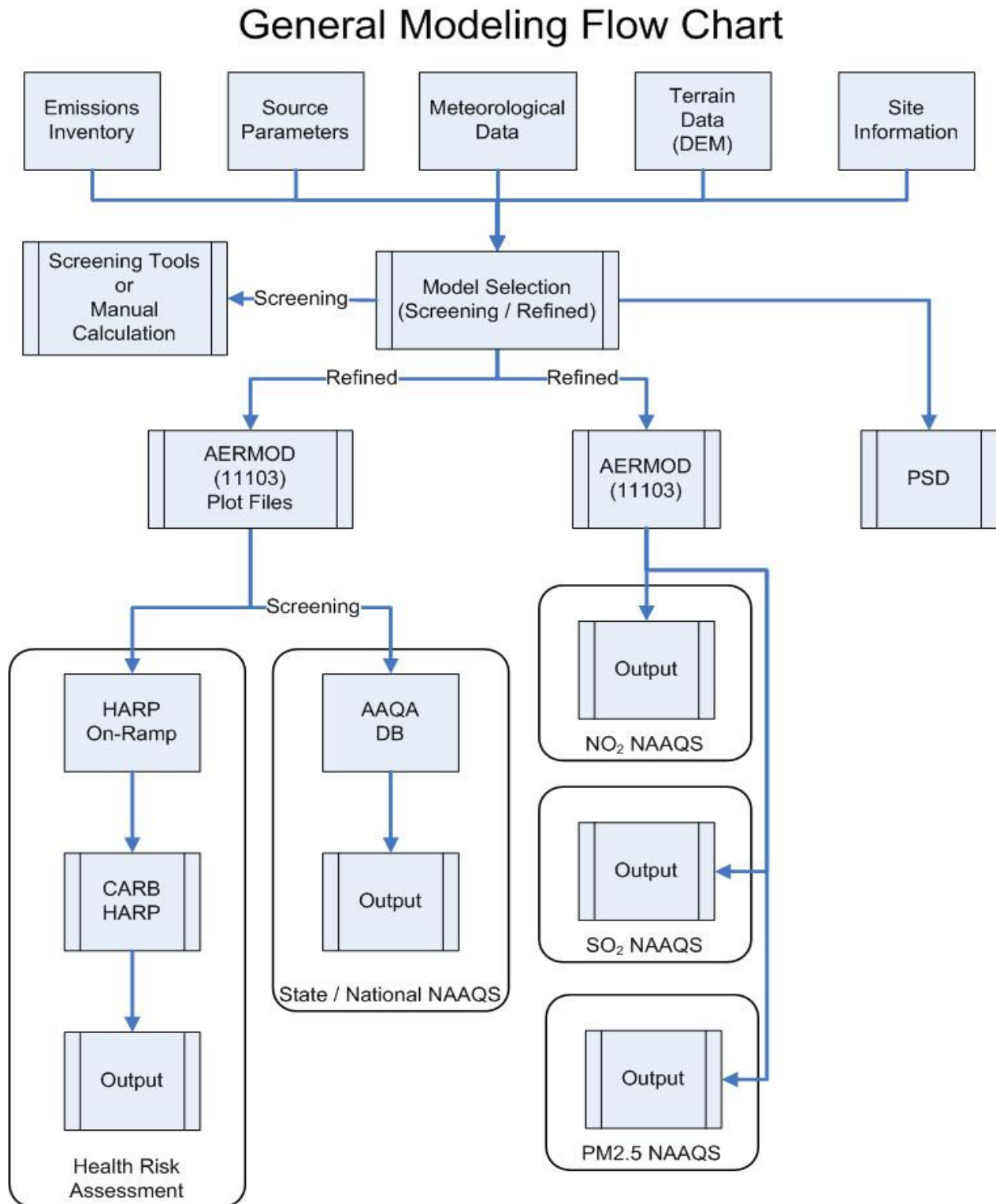
If all of the four questions above are “Yes”, the screening method, for the most part, would be the best choice.

Figure 6 (*General Modeling Flow Chart*), describes some of the most commonly used elements for conducting dispersion modeling and the general process for performing modeling. Each of these elements is discussed in more detail in the District’s Modeling Guidelines/Training Manual.

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Figure 6 - General Modeling Flow Chart





In implementing the District's responsibilities under AB 2588, the District's Governing Board adopted notification procedures for notifying the public of significant carcinogenic and non-carcinogenic health risks. Thresholds of significance for health risks are presented in Table 5 (*HRA Thresholds of Significance*).

| Table 5 - HRA Thresholds of Significance |                                                                            |
|------------------------------------------|----------------------------------------------------------------------------|
| Carcinogens                              | Maximally Exposed Individual equals or exceeds 10 in one million.          |
| Non-Carcinogens                          | Hazard Index equal or greater than 1 for the Maximally Exposed Individual. |

**Please note:** Carcinogenic (cancer) risk is expressed as excess cancer cases per one million. Non-carcinogenic (acute and chronic) hazard indices (HI) are expressed as a ratio of expected exposure levels to acceptable exposure levels.



## 8.4. Thresholds of Significance – Criteria Pollutant Emissions

### 8.4.1. Introduction

The District has statutory authority over most air quality matters in the San Joaquin Valley. Key activities include development and implementation of attainment plans, and regulating stationary sources of emissions. An attainment plan is functionally an air district's strategy for meeting federal air quality standards. Attainment plans are mandated by federal law, must show attainment by mandated deadlines, are enforceable by courts, and failure to achieve attainment can result in sanctions being triggered. Key elements of an attainment plan are:

1. Current and future emission inventories
2. Modeling to quantify needed reductions
3. Measures to achieve reductions
4. Analytical demonstration with reductions that provide for attainment
5. Transportation conformity budgets
6. Legal commitment to secure reductions

Regional impacts on air quality result from emissions generated during short-term activities (construction), and long-term activities (operations).

#### Construction emissions

The major air pollutants associated with construction emissions include fugitive PM and diesel exhaust emissions of NO<sub>x</sub> and PM and to a lesser extent, SO<sub>x</sub> and VOC.

#### Operational emissions

Operational emissions of criteria pollutants are source specific and consist of the following categories:

- Permitted equipment and activities
- Non-permitted equipment and activities
  - Permit exempt equipment
  - Mobile source (on-site and on-road)
  - Non-permitted activities

Measures to reduce and mitigate impacts from short-term activities differ from those applicable to long-term activities. Measures taken to reduce and mitigate impacts from permitted equipment at stationary sources differ from those applicable to non-permitted equipment and mobile sources. Thus, as discussed below, the significance of impacts from each of these major sources is analyzed separately.



#### 8.4.2. Construction Emissions

Emissions from construction activities are relatively short-term. However, on a regional level, even short-term activities can have significant impacts on air quality. Construction emissions consist mainly of exhaust emissions (NO<sub>x</sub> and PM) from construction equipment and other mobile sources, and fugitive dust (PM) emissions from earth moving activities. Construction activities also result in area source emissions such as emissions from paving and architectural coatings.

An Initial Study should evaluate emissions from construction activities. When considering the impact of construction emissions on air quality, a lead agency should consider the extent to which compliance with District Regulation VIII (See section 7.27) and District Rule 9510 (See section 6.3) will reduce fugitive dust and construction exhaust emissions.

The quantity of criteria pollutant emissions is proportionate to the size of the construction project. For large construction projects, compliance with District Regulation VIII and Rule 9510 may not reduce project specific construction emissions to below the District's thresholds of significance. As presented in Chapter 7, to streamline the process of assessing significance of criteria pollutant emissions from common construction projects, the District has developed the screening tool, *Small Project Analysis Level* (SPAL). Using project type and size, the District has pre-quantified emissions and determined a size below which it is reasonable to conclude that a project would not exceed applicable thresholds of significance for criteria pollutants.

If the initial study demonstrates that construction emissions would be less than significant, quantification of construction emissions is not required. However, to meet the standards of adequacy for disclosure of potential environmental impacts and mitigation, the District recommends that the lead agency's environmental document include an narrative that identifies the main sources of construction emissions and include sufficient discussion of applicable District rules and regulation and SPAL values to support the conclusion that criteria pollutant emissions from construction activities would have a less than significant impact on air quality.

If the initial study demonstrates that construction emissions would be significant, quantification of construction emissions is required. Because mitigation measures differ for mobile source and fugitive dust emissions, the District recommends that construction exhaust emissions and fugitive dust emissions be quantified separately. However, when determining significance of PM emissions, construction exhaust PM and fugitive dust PM is summed. A project would be determined to have a significant, short-term impact on air quality if any criteria pollutant exceeds its respective threshold of significance.



### **8.4.3. Operational Emissions – Permitted Equipment and Activities**

As presented in section 7.25, the District's permitting process ensures that emissions of criteria pollutants from permitted equipment and permitted activities at a stationary source are reduced or mitigated to below the District's thresholds of significance. Therefore, it is reasonable for the lead agency to conclude that emissions from permitted equipment or activities located at stationary sources will have a less than significant impact on air quality.

Quantification of criteria pollutant emissions from permitted equipment or permitted activities is thus, not required. However, to meet the standards of adequacy for disclosure of potential environmental impacts and mitigation, the District recommends that the lead agency's environmental document include an operational narrative that identifies the main permitted activities and their emissions. The narrative should include sufficient discussion of the permitted activities and District's permitting process to support the conclusion that criteria pollutant emissions from permitted sources would have a less than significant impact on air quality.

### **8.4.4. Operational Emissions – Non-Permitted equipment and activities**

#### Permit Exempt Equipment

Equipment at stationary sources that is exempt from District permit requirements because they fall below the District's emission thresholds for requiring permits is considered to have a less than significant impact on air quality. As such, there is no need to quantify emissions from these sources.

#### Mobile Sources

The majority of non-stationary source operational emissions results from mobile source activities, including both on-site and on-road motor vehicle use. For industrial projects, onsite mobile sources commonly include off-road vehicles, such as forklifts and tractors and on-road passenger vehicle use. Off-site mobile sources commonly include heavy-duty vehicles used to transport raw material and ship finished goods and light-duty vehicle use associated with employee trips. For commercial projects, mobile source activities include receipt of goods, and customer and employee trips. For development projects, mobile source activities commonly include vehicular travel from home to work, home to shop, and deliveries.



An Initial Study should evaluate emissions from all mobile source activities. Mobile source emissions are a function of project type and project size. For example mobile source activities would be different for a regional distribution versus a residential development project. As presented in Chapter 7, to streamline the process of assessing significance of criteria pollutant emissions from common projects, the District has developed the screening tool, *Small Project Analysis Level* (SPAL). Using project type and size, the District has pre-quantified emissions and determined a size below which it is reasonable to conclude that operational emissions from a project would not exceed applicable thresholds of significance for criteria pollutants. This analysis includes emission from mobile source activities.

If the initial study demonstrates that operational emissions from non-permitted activities would be less than significant, quantification of emissions from these sources is not required. However, to meet the standards of adequacy for disclosure of potential environmental impacts and mitigation, the District recommends that the lead agency's environmental document include an narrative that identifies the main sources of non-permitted emissions and include sufficient discussion of District SPAL values to support the conclusion that criteria pollutant emissions from non-permitted emission sources would have a less than significant impact on air quality.

If the initial study demonstrates that emissions from non-permitted activities would be significant, quantification of those emissions is required. Because mitigation measures differ for mobile sources versus other non-permitted operational activities, the District recommends that mobile source (both exhaust emissions and fugitive dust emissions) be quantified separate from other non-permitted sources or activities. However, emissions from all non-permitted equipment and activities are summed by criteria pollutant when determining significance. A project would be determined to have a significant, long-term impact on air quality if any criteria pollutant resulting from non-permitted equipment and activities exceeds its respective threshold of significance.

#### Non-Permitted Activities

In addition to mobile source emissions, operational emissions from non-permitted activities commonly include emissions from energy use, such as space heating, use of consumer products, and landscape maintenance. Although uncommon, there are source specific non-permitted activities, such as mining operations, that could have a significant impact on air quality.

An Initial Study should evaluate emissions all non-permitted sources and activities. Operational emissions from common projects are a function of project type and project size. For example operational emissions from non-permitted activities would be different for a commercial development project versus a residential



development project. As presented in Chapter 7, to streamline the process of assessing significance of criteria pollutant emissions from common projects, the District has developed the screening tool, *Small Project Analysis Level* (SPAL). Using project type and size, the District has pre-quantified emissions and determined a size below which it is reasonable to conclude that operational emissions from a project would not exceed applicable thresholds of significance for criteria pollutants. This analysis includes emission from mobile source activities.

If the initial study demonstrates that operational emissions from non-permitted activities would be less than significant, quantification of emissions from these sources is not required. However, to meet the standards of adequacy for disclosure of potential environmental impacts and mitigation, the District recommends that the lead agency's environmental document include an narrative that identifies the main sources of non-permitted emissions and include sufficient discussion of District SPAL values to support the conclusion that criteria pollutant emissions from non-permitted emission sources would have a less than significant impact on air quality.

If the initial study demonstrates that emissions from non-permitted activities would be significant, quantification of those emissions is required. Because mitigation measures differ for mobile sources versus other non-permitted operational activities, the District recommends that mobile source (both exhaust emissions and fugitive dust emissions) be quantified separate from other non-permitted sources or activities. However, emissions from all non-permitted activities are summed by criteria pollutant when determining significance. A project would be determined to have a significant, long-term impact on air quality if any criteria pollutant exceeds its respective threshold of significance.

#### **8.4.5. Significance and District Attainment Strategy**

District rule 2201 (New Source Review) is a major component of the District's attainment strategy as it relates to growth. New Source Review (NSR) applies to new and modified stationary sources of air pollution. NSR provides mechanisms, including emission trade-offs, by which Authorities to Construct such sources may be granted, without interfering with the attainment or maintenance of Ambient Air Quality Standards. District implementation of NSR ensures that there is no net increase in emissions above specified thresholds from new and modified Stationary Sources for all nonattainment pollutants and their precursors.

Under NSR, all new permitted sources (emission units) with emission increases exceeding two (2) pounds per day, for any criteria pollutant is required to implement best available control technology (BACT). As defined in District Rule 2201, BACT is:



The most stringent emission limitation or control technique of the following:

1. Achieved in practice for such category and class of source;
2. Contained in any State Implementation Plan approved by the Environmental Protection Agency for such category and class of source. A specific limitation or control technique shall not apply if the owner of the proposed emissions unit demonstrates to the satisfaction of the APCO that such a limitation or control technique is not presently achievable; or
3. Contained in an applicable federal New Source Performance Standard; or
4. Any other emission limitation or control technique, including process and equipment changes of basic or control equipment, found by the APCO to be cost effective and technologically feasible for such class or category of sources or for a specific source.

Furthermore, all permitted sources emitting more than the New Source Review Offset Thresholds for any criteria pollutant must offset all emission increases in excess of the thresholds.

The District's thresholds of significance for criteria pollutants are applied to evaluate regional impacts of project specific emissions of air pollutants. Regional impacts of a project can be characterized in terms of total annual emissions of criteria pollutants and their impact on the District's ability to reach attainment.

The District's attainment plans demonstrate that project specific emissions below the District's offset thresholds will have a less than significant impact on air quality. Thus, the District concludes that use of District NSR Offset Requirements to establish thresholds of significance under CCR §15064.7 is an appropriate and effective means of promoting consistency in significance determinations within the environmental review process and are applicable to both stationary and non-stationary emissions sources.

#### **8.4.6. Table of thresholds of Significance**

The list of the District's adopted thresholds of significance for criteria pollutant emissions and their application is presented in Table 6 (*Air Quality Thresholds of Significance – Criteria Pollutants*). Revisions to District NSR Offset Requirements are infrequent. However, upon publication on the District's website, revisions to District NSR Offset Requirements are automatically adopted as District CEQA significance thresholds. The most current thresholds of significance are available on-line at the District's website:  
<http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf>.



As discussed above, operational non-permitted equipment and activities are evaluated separate from permitted equipment and activities. When determining significance of a specific criteria pollutant, emissions from all operational non-permitted equipment and activities are summed by pollutant. A project would be determined to have a significant long-term impact on air quality if the emissions sum for any criteria pollutant exceeds its respective threshold of significance, identified in Table 6 – Air Quality Thresholds of Significance – Criteria Pollutants.

| Table 6 - Air Quality Thresholds of Significance – Criteria Pollutants |                        |                                    |                                        |
|------------------------------------------------------------------------|------------------------|------------------------------------|----------------------------------------|
| Pollutant/Precursor                                                    | Construction Emissions | Operational Emissions              |                                        |
|                                                                        |                        | Permitted Equipment and Activities | Non-Permitted Equipment and Activities |
|                                                                        | <i>Emissions (tpy)</i> | <i>Emissions (tpy)</i>             | <i>Emissions (tpy)</i>                 |
| CO                                                                     | 100                    | 100                                | 100                                    |
| NO <sub>x</sub>                                                        | 10                     | 10                                 | 10                                     |
| ROG                                                                    | 10                     | 10                                 | 10                                     |
| SO <sub>x</sub>                                                        | 27                     | 27                                 | 27                                     |
| PM <sub>10</sub>                                                       | 15                     | 15                                 | 15                                     |
| PM <sub>2.5</sub>                                                      | 15                     | 15                                 | 15                                     |

## 8.5. Thresholds of Significance – Odors

While offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the District. Any project with the potential to frequently expose members of the public to objectionable odors should be deemed to have a significant impact.

Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, there are no quantitative or formulaic methodologies to determine if potential odors would have a significant impact. Rather, projects must be assessed on a case-by-case basis. Lead agencies should consider all available pertinent information to qualitatively determine if a significant impact is likely to occur. Odor impacts on residential areas and other sensitive receptors, such as hospitals, day-care centers, schools, etc., warrant the closest scrutiny, but consideration should also be given to other land uses where people may congregate,



such as recreational facilities, worksites, and commercial areas. An analysis of potential odor impacts should be conducted for the following two situations:

1. Generators – projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate, and
2. Receivers – residential or other sensitive receptor projects or other projects built for the intent of attracting people locating near existing odor sources.

The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The District has identified some common types of facilities that have been known to produce odors in the SJV San Joaquin Valley Air Basin. These are presented in Table 7 (*Screening Levels For Potential Odor Sources*) along with a reasonable distance from the source within which, the degree of odors could possibly be significant.

Table 7 (*Screening Levels For Potential Odor Sources*), can be used as a screening tool to qualitatively assess a project's potential to adversely affect area receptors. This list of facilities is not all-inclusive. The Lead Agency should evaluate facilities not included in the table or projects separated by greater distances if warranted by local conditions or special circumstances. If the proposed project would result in sensitive receptors being located closer than the screening level distances, a more detailed analysis should be provided.

**Table 7 - Screening Levels For Potential Odor Sources**

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



Lead Agencies can also make a determination of significance based on a review of District complaint records. For a project locating near an existing source of odors, the impact is potentially significant when the project site is at least as close as any other site that has already experienced significant odor problems related to the odor source. Significant odor problems are defined as:

- More than one confirmed complaint per year averaged over a three year period, or
- Three unconfirmed complaints per year averaged over a three-year period.

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Because of the subjective nature of odor impacts and the lack of quantitative or formulaic methodologies, the significance determination of potential odor impacts should be considered on a case-by-case basis. The District concludes that use of the above screening tool as an appropriate and effective means of promoting consistency in significance determinations within the environmental review process. Revisions to District approved screening tools are infrequent. However, upon publication on the District's website revisions are automatically adopted as CEQA significance thresholds. The most current thresholds of significance are available on-line at the District's website [www.valleyair.org](http://www.valleyair.org).

## **8.6. Thresholds of Significance - Accidental Releases**

The determination of significance for potential impacts from accidental releases of acutely hazardous air pollutants should be made in consultation with the local administering agency of the Risk Management Prevention Program. The county health department, Office of Emergency Services, or local fire department is usually the administering agency.

## **8.7. Thresholds of Significance - Cumulative Impacts**

### **8.7.1. Introduction**

When assessing whether there is a new significant cumulative effect, the lead agency shall consider whether the incremental effects of the project are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects [CCR §15064(h)(1)].

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 [CCR §15064(h)(1)].

### **8.7.2. Criteria Pollutants**

As discussed in section 8.4 (Thresholds of Significance – Criteria Pollutant Emissions) the District's thresholds of significance for criteria pollutants are based on District rule 2201 (New Source Review) offset requirements. Furthermore, New Source Review (NSR) is a major component of the District's attainment strategy. The District's attainment plans demonstrate that project specific emissions below New Source Review (NSR) offset requirements will not prevent the District from



achieving attainment. Consequently, if project specific criteria pollutant emissions are below their respective thresholds of significance, the project would be consistent with the overall District attainment plan and would be determined to have a less than cumulatively significant impact on air quality.

### **8.7.3. Toxic Air Contaminants (TAC)**

Impacts from hazardous air pollutants are largely localized impacts. As presented above in section 8.3 (Thresholds of Significance - Toxic Air Contaminant Emissions), the District has established thresholds of significance for toxic air contaminants (TAC) that are extremely conservative; protective of health impacts on sensitive receptors. Consequently, the District's application of thresholds of significance for TACs is relevant to the determination of whether individual project emissions of TAC would have a cumulatively significant health impact. Because the established TAC significance thresholds are highly conservative, if project specific TAC emissions would have a less than significant health impact, the project would not be expected to result in a cumulatively considerable net increase in TAC. Thus, the project would be determined to have a less than cumulatively significant impact on air quality.

## **8.8. Thresholds of Significance - Greenhouse Gas Emissions**

By enacting SB 97 in 2007, California's lawmakers expressly recognized the need to analyze greenhouse gas emissions as a part of the CEQA process. SB 97 required OPR to develop, and the Natural Resources Agency to adopt, amendments to the CEQA Guidelines addressing the analysis and mitigation of greenhouse gas emissions. Those CEQA Guidelines amendments clarified several points, including the following:

- Lead agencies must analyze the greenhouse gas emissions of proposed projects, and must reach a conclusion regarding the significance of those emissions. [See CCR §15064.4];
- When a project's greenhouse gas emissions may be significant, lead agencies must consider a range of potential mitigation measures to reduce those emissions. [See CCR §15126.4(c)];
- Lead agencies must analyze potentially significant impacts associated with placing projects in hazardous locations, including locations potentially affected by climate change. [See CCR §15126.2(a)];
- Lead agencies may significantly streamline the analysis of greenhouse gases on a project level by using a programmatic greenhouse gas emissions reduction plan meeting certain criteria. [See CCR §15183.5(b)];
- CEQA mandates analysis of a proposed project's potential energy use (including transportation-related energy), sources of energy supply, and ways to reduce energy demand, including through the use of efficient transportation alternatives. (See CEQA Guidelines, Appendix F.)



It is widely recognized that no single project could generate enough GHG emissions to noticeably change the global climate temperature. However, the combination of GHG emissions from past, present and future projects could contribute substantially to global climate change. Thus, project specific GHG emissions should be evaluated in terms of whether or not they would result in a cumulatively significant impact on global climate change.

On December 17, 2009, the District's Governing Board adopted the District Policy: *Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*. The District's Governing Board also approved the guidance document: *Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects Under CEQA*. In support of the policy and guidance document, District staff prepared a staff report: *Addressing Greenhouse Gas Emissions Under the California Environmental Quality Act*. These documents and the supporting staff report are available on-line at the District's website at [www.valleyair.org](http://www.valleyair.org).

In summary, the staff report evaluates different approaches for assessing significance of GHG emission impacts. As presented in the report, District staff reviewed the relevant scientific information and concluded that the existing science is inadequate to support quantification of the extent to which project specific GHG emissions would impact global climate features such as average air temperature, average rainfall, or average annual snow pack. In other words, the District was not able to determine a specific quantitative level of GHG emissions increase, above which a project would have a significant impact on the environment, and below which would have an insignificant impact. This is readily understood, when one considers that global climate change is the result of the sum total of GHG emissions, both manmade and natural that occurred in the past; that is occurring now; and will occur in the future.

In the absence of scientific evidence supporting establishment of a numerical threshold, the District policy applies performance based standards to assess project specific GHG emission impacts on global climate change. The determination is founded on the principal that projects whose emissions have been reduced or mitigated consistent with the California Global Warming Solutions Act of 2006, commonly referred to as "AB 32", should be considered to have a less than significant impact on global climate change. For a detailed discussion of the District's establishment of thresholds of significance for GHG emissions, and the District's application of said thresholds, the reader is referred to the above referenced staff report, District Policy, and District Guidance documents.



As presented in Figure 7 (*Process of Determining Significance of Greenhouse Gas Emissions*), the policy provides for a tiered approach in assessing significance of project specific GHG emission increases.

- Projects complying with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less than significant individual and cumulative impact for GHG emissions. Such plans or programs must be specified in law or approved by the lead agency with jurisdiction over the affected resource and supported by a CEQA compliant environmental review document adopted by the lead agency. Projects complying with an approved GHG emission reduction plan or GHG mitigation program would not be required to implement Best Performance Standards (BPS).
- Projects implementing BPS would not require quantification of project specific GHG emissions. Consistent with CEQA Guideline, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.
- Projects not implementing BPS would require quantification of project specific GHG emissions and demonstration that project specific GHG emissions would be reduced or mitigated by at least 29%, compared to Business as Usual (BAU), including GHG emission reductions achieved since the 2002-2004 baseline period, consistent with GHG emission reduction targets established in ARB's AB 32 Scoping Plan. Projects achieving at least a 29% *GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG.*

The District guidance for development projects also relies on the use of BPS. For development projects, BPS includes project design elements, land use decisions, and technologies that reduce GHG emissions. Projects implementing any combination of BPS, and/or demonstrating a total 29 percent reduction in GHG emissions from business-as-usual (BAU), would be determined to have a less than cumulatively significant impact on global climate change.



**Figure 7 - Process of Determining Significance of Greenhouse Gas Emissions**

