

GUIDE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACTS

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of the Planning Division
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This document is an advisory document, that provides Lead Agencies, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents. Copies and updates are available from the SJVAPCD Planning Division at (559) 230-5800. Questions on content should be addressed to either the Mobile Source/CEQA Section at (559) 230-5800 or the SJVAPCD CEQA representative at the regional office that covers the county in which the project is located.

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SECTION 1 – INTRODUCTION

1.1 PURPOSE OF THIS DOCUMENT

The *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI) is an advisory document, that provides Lead Agencies, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents. The GAMAQI contains the following components:

- SJVAPCD’s role as a commenting agency or responsible agency (Section 2);
- Preliminary project review - actions Lead Agencies can take to reduce air quality impacts prior to beginning the California Environmental Quality Act (CEQA) process (Section 3);
- Criteria and thresholds for determining whether a project may have a significant adverse air quality impact (Section 4);
- Specific procedures and modeling protocols for quantifying and analyzing air quality impacts (Section 5);
- Methods available to mitigate air quality impacts (Section 6);
- Information for use in air quality assessments and EIRs that will be updated more frequently such as air quality data, regulatory setting, climate, topography, etc. (Technical Document).

Authority to Comment. The San Joaquin Valley Air Pollution Control District (SJVAPCD), which is comprised of the San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare Counties and the Valley portion of Kern County (see Figure 1-1)¹, has jurisdiction over most air quality matters in the San Joaquin Valley Air Basin (SJVAB). The SJVAPCD is tasked with implementing certain programs and regulations required by the Federal Clean Air Act (FCAA) and the California Clean Air Act (CCAA). The SJVAPCD prepares plans to attain state and national ambient air quality standards. In order to accomplish its mandates the SJVAPCD maintains a staff of planners and technical personnel versed in the various aspects of air pollution control and analysis.

The SJVAPCD *1991 Air Quality Attainment Plan* (AQAP) includes a control measure for an enhanced CEQA review program. The program requires the SJVAPCD to provide technical assistance to Lead Agencies in addressing air quality issues in environmental

¹ This information and other information about the SJVAPCD’s programs are also available on the District’s Website at (<http://www.valleyair.org>)

Figure 1-1

San Joaquin Valley Air Pollution Control District Boundaries



documents and to comment on project air quality impacts. In addition, the SJVAPCD suggests mitigation measures to reduce air quality impacts of development projects.

The Air Pollution Problem. The SJVAB has one of the most severe air pollution problems in the State of California and the nation. Air pollution is hazardous to health, diminishes the production and quality of many agricultural crops, reduces visibility, degrades or soils materials, and damages native vegetation. State and national ambient air quality standards were created to protect the public health and welfare, and to minimize the other effects mentioned above. The standards address pollutants in the ambient air, the air that people breathe outside of buildings, as they go about their daily activities. The SJVAB does not meet the standards for ozone and respirable particulate matter (PM-10). In recent years the standard for carbon monoxide (CO) has not been exceeded in the SJVAB, however, background concentrations are still high enough for CO hot spots to be potential problems in urban areas with high levels of traffic congestion. Further information regarding these pollutants and the status of air quality in the SJVAB is provided throughout this document and the separate Technical Document.

Nearly all development projects in the San Joaquin Valley (SJV), from general plans to individual site plans, have the potential to generate pollutants that will worsen air quality or make it more difficult for state and national air quality attainment standards to be attained. Therefore, for most projects, it is necessary to evaluate air quality impacts to comply with CEQA. The GAMAQI is intended to help public agencies review and evaluate these impacts. A properly prepared CEQA document will inform decision-makers and the public about the air quality impacts of a project and facilitate a public dialogue regarding their implications. It will serve not only to protect the environment, but will also demonstrate to the public that it is being protected.

GAMAQI Limitations. The content of the GAMAQI is focused on the most frequently encountered land use projects. Projects not specifically addressed in terms of analysis methods and mitigation measures include, but are not limited to, highway construction, transportation plans, pipeline development, and dairy construction. The District currently makes recommendations for these types of projects on a case by case basis.

1.2 THE ENVIRONMENTAL REVIEW PROCESS

The California Legislature enacted CEQA in 1970 [Public Resources Code (PRC) §21000 *et seq.*].² CEQA requires public agencies (i.e., local, county, regional, and state government) to consider and disclose the environmental effects of their decisions to the public and governmental decision-makers. Further, it mandates that agencies implement feasible mitigation measures or alternatives that would mitigate significant adverse effects to the environment. Finally, CEQA provides a mechanism for disclosing to the public the

² In addition, the Secretary of Resources promulgated regulations, known as the State CEQA Guidelines, which provide detailed procedures that agencies must follow to implement CEQA. The CEQA Guidelines are contained in the California Code of Regulations (CCR), Title 14, Chapter 3, Sections 15000 *et seq.*

reasons why a governmental agency approved a project if significant environment effects are involved.

Perhaps the best-known application of CEQA is the requirement that a public agency prepare an Environmental Impact Report (EIR) whenever a project has the potential to create significant effects on the environment. The purpose of an EIR is “to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided”³.

CEQA requires public agencies to address the full range of environmental issues, including water quality, noise, land use, natural resources, transportation, energy, human health, and air quality. The guidance that follows addresses air quality analyses under CEQA. However, it also has implications for analyses of human health, water quality, risks of upset, and other environmental areas related to air quality.

1.3 DISTRICT’S ROLE IN CEQA

For each project under CEQA, the SJVAPCD has one of three roles: Lead Agency, Responsible Agency, or a commenting agency.

Lead Agency. The SJVAPCD acts as a Lead Agency when it has principal responsibility to carry out or approve a project. This typically occurs when it develops rules, regulations, and air quality plans. The SJVAPCD may also become a Lead Agency for projects requiring SJVAPCD approval of discretionary air quality permits and not requiring any discretionary action from any other agency⁴. This may also occur when an environmental document prepared by another Lead Agency is inadequate for the SJVAPCD to act upon.

Responsible Agency. The SJVAPCD acts as a Responsible Agency when it has discretionary power over a project but does not have the principal authority to carry out the project. The SJVAPCD is often a Responsible Agency for development projects that require air pollution control permits. In this capacity, it considers the EIR or Negative Declaration prepared by the Lead Agency and reaches its own conclusions on whether and how to approve the project involved⁵. To ensure that the environmental document is adequate for its use, the SJVAPCD provides comments to the Lead Agency on its air quality analysis and mitigation measures, if applicable.⁶ During the EIR process, CEQA provides that the SJVAPCD may comment at three points:

³ PRC §21002.1

⁴ The State CEQA Guidelines [CCR §15051(b)(1)] makes it clear that the Lead Agency will normally be the agency with general governmental powers, not an agency like an air district which is more limited in purpose.

⁵ CCR §15096(a)

⁶ The State CEQA Guidelines [CCR §15096(a)(2)(d)] states that when commenting on Draft EIRs and Negative Declarations, responsible agencies are limited to those project activities within the agency’s area of expertise or which are required to be approved by the agency.

- informally on projects before the formal review process begins;
- in response to the Notice of Preparation that an EIR is being prepared;
- and when the draft EIR is circulated for public review.

To help public agencies and project applicants determine whether air quality permits are required for a project, the SJVAPCD has prepared a list (Figure 1-2) that identifies projects that often require air quality permits. These projects also may be sources of emissions classified as hazardous air pollutants that require screening and, potentially, health risk assessments by the SJVAPCD.

Commenting Agency. The SJVAPCD acts as commenting agency for any project that has the potential to impact air quality and for which it is not a lead or responsible agency.⁷ To this end, it regularly provides comments to Lead Agencies that prepare environmental documents.

1.4 REGIONAL OFFICES

The SJVAPCD is officially divided into three regions: northern, central, and southern (see Figure 1-1). The Southern Region consists of Tulare County and the portion of Kern County in the SJVAB and is administered by an office in Bakersfield. The Central Region is composed of Fresno, Kings, and Madera Counties, with the office being located in Fresno. This office also serves as the main headquarters. Merced, Stanislaus, and San Joaquin Counties make up the Northern Region, with an office located in Modesto.

However, the Southern Region is responsible for CEQA activities in Kings County.

All Lead Agencies, consultants, project applicants, or other interested parties should contact the office in their region regarding the SJVAPCD's responsibilities as a Responsible or commenting agency (see Appendix B for contact information.)

1.5 HOW TO USE THE GAMAQI

The GAMAQI is intended for use by Lead Agencies and consultants preparing CEQA air quality documents. The document employs the following structure for easier use and long term utility:

- **Dated Information.** To the greatest extent feasible, information that may change quickly or which needs to be updated frequently is located in a separate Technical Document. Before using information from the technical document, the Lead Agency or consultant should contact the SJVAPCD CEQA staff in the appropriate

⁷ CEQA Guidelines [CCR §15044] permits any person or entity that is not a responsible agency to comment to a Lead Agency on any environmental impact of a project.

regional office or the District web site at www.valleyair.org to determine the most up-to-date version.

The entire GAMAQI will be updated periodically as legislative, legal, and technical changes dictate. Updates will be provided in a three-ring binder format for insertion into your current GAMAQI.

**Figure 1-2
Examples of Projects Requiring SJVAPCD Air Quality Permits**

The SJVAPCD Rule 2010 states that “any person who plans to or does operate, construct, alter, or replace any source of emission of air contaminants” must obtain approval of the Air Pollution Control Officer and receive an Authority to Construct and a Permit to Operate.

Examples of air contaminant emitting equipment and processes include (but are not limited to):

- Agricultural products processing
- Bulk material handling
- Chemical blending, mixing, manufacturing, storage, etc.
- Combustion equipment (boilers, engines, heaters, incinerators, etc.)
- Metals etching, melting, plating, refining, etc.
- Plastics & fiberglass forming and manufacturing
- Petroleum production, manufacturing, storage, and distribution
- Rock & mineral mining and processing
- Solvent use (degreasing, dry-cleaning, etc.)
- Surface coating and preparation (painting, blasting, etc.)

Note: Equipment operated and installed without an Authority to Construct is subject to legal action and fines up to \$25,000 for each day of violation.

To obtain assistance in determining if a project is subject to SJVAPCD permit and for information on procedures for obtaining an Authority to Construct, call the SJVAPCD’s Small Business Assistance (SBA) Office in the regional District offices:

Northern Office SBA	(209) 557-6446
Central Office SBA	(559) 230-5888
Southern Office SBA	(661) 326-6969

- **Models.** There are a number of references to specific air quality models in the GAMAQI. These are the most current models available at the time the GAMAQI was prepared and are subject to change. The latest approved models should always be used for air quality analysis. If unsure about current models, modelers should contact the SJVAPCD CEQA staff.
- **Organization.** This document is organized to reflect the environmental review process for a Lead Agency. Because each section provides information on an

essential step in a CEQA air quality analysis process, the GAMAQI can be used as a reference resource at any step of the environmental review process.

- **Early Consultation at the Planning Counter.** One goal of the GAMAQI is to provide information to project proponents about air quality issues early in the planning process. Planners can use the information in this document and also the information provided in the SJVAPCD's *Air Quality Guidelines for General Plans* and the websites mentioned in Section 3.2 to encourage developers to consider air quality issues and minimize potential impacts before completing a project's scope or design.
- **District Support.** SJVAPCD CEQA representatives are available to answer questions about the guidance in this document and air quality-related questions at (559) 230-5800 in the Central Region office servicing Fresno and Madera Counties; (209) 557-6400 in the Northern Region office servicing Merced, Stanislaus, and San Joaquin Counties; and (661) 326-6900 in the Southern Region office servicing Kings and Tulare Counties and the SJV portion of Kern County.

1.6 RELATIONSHIP TO NEPA

Some projects subject to CEQA may also require compliance with federal environmental law, namely the National Environmental Policy Act (NEPA). The air quality analyses prepared in accordance with the GAMAQI should be adequate in most cases to meet NEPA as well as CEQA requirements.

SECTION 2 – CONSULTING WITH THE SJVAPCD

2.1 INTRODUCTION

As noted in Section 1, the SJVAPCD can have one of three areas of responsibility under the CEQA: Lead Agency, Responsible Agency, and as a commenting agency. The SJVAPCD's specific responsibilities as a Lead Agency are addressed in a separate SJVAPCD document entitled *Environmental Review Guidelines*⁸, which is available for review at any of the District's three regional offices or from the District's web site at www.valleyair.org.

This GAMAQI focuses on the SJVAPCD's expectations and responsibilities as a commenting agency. The GAMAQI also describes the special considerations required when the District is a Responsible Agency. This section addresses the general CEQA procedures that the SJVAPCD expects Lead Agencies to follow and its own responsibilities during the consultation process. This section lists occasions when the District requests to receive documents for review; however, this does not constitute a formal request since the GAMAQI is an advisory document.

2.2 LEAD AGENCY CONSULTATION REQUIREMENT

Most development projects in the San Joaquin Valley have the potential to impact air quality. Lead Agencies that should consult with the SJVAPCD thus consist of all public agencies in the SJVAB that undertake or have authority to approve discretionary projects within the boundaries of the District. These include, but are not limited to, the eight counties, 59 cities, Councils of Government, Transportation Planning Agencies, state and federal agencies, school districts, and special purpose districts such as water districts or community service districts. Any agency or other entity that is unsure of its responsibility to consult with the SJVAPCD should contact the nearest SJVAPCD regional office for information and assistance.

2.3 WHEN CONSULTATION IS REQUIRED

The SJVAPCD is available for consultation at any time in the project review process, but there are certain times when consultation is required. When the SJVAPCD has discretionary approval authority over a project for which another public agency is serving as Lead Agency, it is to be consulted as a Responsible Agency. When the SJVAPCD does not have any approval authority over a project, it is to be consulted as a commenting agency. CEQA requires or provides opportunities for consultation at various times during the environmental review process. These include opportunities for review prior to the

⁸ Adopted by the Governing Board in August 2000.

preparation of the environmental document and during public review of the completed document.

2.3.1 Review Prior to Preparation of Environmental Document

CEQA provides for several opportunities for consultation prior to the preparation of an EIR or Negative Declaration. These opportunities are described below.

Prior to Determination to Proceed with a ND or an EIR. CEQA⁹ provides that Lead Agencies must formally consult with Responsible Agencies prior to making a determination as to whether a Negative Declaration or an EIR is required for a project. This section also provides that a Lead Agency may informally consult with other agencies prior to formal consultation. This consultation is generally accomplished by the Lead Agency requesting information related to potential impacts and mitigation measures that the project may have upon the resource under each agency's jurisdiction. The SJVAPCD requests that it be consulted by Lead Agencies on all projects at this stage of the CEQA process¹⁰.

Notice of Preparation. When a Lead Agency decides to prepare an EIR, it must consult with Responsible Agencies through a Notice of Preparation (NOP) of the EIR¹¹. The NOP must be sent by registered mail or a similar method that can demonstrate that the required notice was mailed. When the SJVAPCD is a Responsible Agency, it must receive the NOP. Even though, for most projects the SJVAPCD is not a Responsible Agency, the SJVAPCD's NOP response can provide the Lead Agency important guidance regarding the scope of the environmental effects of their project on air quality. Therefore, the SJVAPCD requests that it receive all NOPs. If a Lead Agency is unsure as to whether the SJVAPCD is a Responsible Agency for a project, please contact the CEQA representative at the nearest SJVAPCD regional office.

Scoping Meetings. Scoping meetings to determine the scope and content of an EIR must be held if requested by a Lead Agency, a Responsible or Trustee Agency, or a project applicant. Any person or organization that will be concerned with the environmental effects of the project may be invited to a scoping meeting. The SJVAPCD requests that it be notified of all scoping meetings for EIRs for projects within its boundaries.

Early Consultation. CEQA encourages Lead Agencies to consult with any individual or agency that will be concerned with the environmental effects of the project prior to the completion of the Draft EIR or Negative Declaration. This is often done in conjunction with the NOP or scoping meetings. If the SJVAPCD is a Responsible Agency or just a commenting agency, it requests that during early consultation it be provided with an opportunity to comment on the air quality impacts of all projects within its boundaries.

⁹ PRC §21080.3(a)

¹⁰ PRC §21104 and §21153

¹¹ PRC §21080.4

2.3.2 Review after Completing the Environmental Document

CEQA Guidelines requires public review periods for completed proposed Negative Declarations¹² and Draft EIRs¹³. The SJVAPCD requests to be included in distribution of all completed environmental documents within its jurisdiction. CEQA Guidelines also requires that Lead Agencies respond to any comments made on Draft EIRs¹⁴.

Review of Proposed Negative Declaration or Mitigated Negative Declaration.

CEQA¹⁵ requires that public notices to issue Negative Declarations be sent to any organization or individual that has so requested. The SJVAPCD realizes that it may not be necessary to review all Negative Declarations for projects on which it was consulted prior to their preparation. Therefore, in responding to consultation, the SJVAPCD will request copies of the Negative Declarations it wishes to review. In general, the SJVAPCD will request copies of Negative Declarations for larger projects for which it has recommended mitigation measures and for projects where the SJVAPCD did not have an opportunity to comment during early consultation.

Review and Comment on the Draft EIR. CEQA¹⁶ also requires that public notices for draft EIRs be sent to any organization or individual that has so requested. In addition, CEQA Guidelines¹⁷ requires Lead Agencies “consult with and request comments on” draft EIRs from both Responsible Agencies and other agencies “which exercise authority over resources which may be affected by the project.” The SJVAPCD requests that all draft EIRs prepared for projects within its boundaries be sent to it for review and comment.

Response to Comments on Draft EIRs. CEQA¹⁸ requires that a Lead Agency send a written response to the SJVAPCD on any comments it has made on a Draft EIR at least ten days prior to certifying the EIR.

2.4 DATA NEEDED FOR SJVAPCD REVIEW

2.4.1 Informal Consultation

SJVAPCD CEQA staff has been reviewing projects since the inception of the District in 1991, and in some SJV counties prior to unification. The data sent to the SJVAPCD for review prior to the preparation of an environmental document varies from one jurisdiction to another. In some cases, a copy of all information submitted by project applicants is sent. In others, only a project title or one paragraph description is sent.

¹² CCR §15073

¹³ CCR §15087

¹⁴ CCR §15088

¹⁵ PRC §21092

¹⁶ PRC §21092

¹⁷ CCR §15086(a)

¹⁸ PRC §21092.5

In order for the SJVAPCD to properly review a project for which an Initial Study has been conducted, Lead Agencies should send a complete project description and location (preferably including a map), site plans, and tentative tract or parcel maps, if applicable; and data relative to number of vehicles or trips associated with the project. At minimum, Lead Agencies should allow ten working days for the SJVAPCD to respond.

For all EIRs prepared for projects in the District, the SJVAPCD requests that it be sent the Notice of Preparation (NOP). The CEQA Guidelines¹⁹ require that the NOP include, at minimum, a description of the project, project location, and the probable environmental effects of the project. The CEQA Guidelines²⁰ provides for a 30-day consultation period for NOPs.

2.4.2 Negative Declarations

The SJVAPCD needs all of the basic information required by CEQA Guidelines²¹ in order to provide a thorough review. This includes 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. To help the SJVAPCD identify previously reviewed projects, this information should correspond to, or reference, the same information provided during the Initial Study consultation process. The Lead Agency should include a copy of the Initial Study that documents reasons to support the Negative Declaration. Finally, any mitigation measures included in the project to avoid potentially significant effects should be in the consultation packet.

If an air quality study is prepared for a project at the Initial Study level, it should be summarized and the results reported in the Initial Study and the entire air quality study should be provided to the SJVAPCD. All assumptions used in the modeling analysis for any project should be clearly stated.

2.4.3 Draft EIRs

The Draft EIR prepared for any project in the SJVAPCD should be sent to the appropriate SJVAPCD regional office for review and comment. Where an air quality study is prepared for a project, it should be summarized and the results reported in the Draft EIR and the entire air quality study should be included as an appendix or as a separate report. All assumptions used in the modeling analysis for any project should be clearly stated. When the Draft EIR includes air quality mitigation measures, the required mitigation monitoring and reporting should be included in or with the Draft EIR.

¹⁹ CCR §15082

²⁰ CCR §15082(b)

²¹ CCR §15071

2.4.4 Response to Comments

A Lead Agency's response to the SJVAPCD's comments on a Draft EIR may be in the form of the final EIR or may be a separate letter. The response should include the date, time, and location for when the Lead Agency proposes to certify the EIR.

2.5 SJVAPCD RESPONSIBILITIES FOR CONSULTATION

2.5.1 Consulting Prior to Environmental Determination

As noted in Section 1, the SJVAPCD is divided into three regions. The Northern Region consists of San Joaquin, Stanislaus, and Merced Counties. The Central Region (for the purpose of CEQA activities only) consists of Madera and Fresno Counties. The Southern Region (for the purpose of CEQA activities only) consists of Kings and Tulare Counties and the valley portion of Kern County. Addresses and telephone numbers for these offices are located in Appendix B and on the District's website (www.valleyair.org). Consultation requests should be sent to the SJVAPCD CEQA representative at the regional office that covers the county in which the project is located. If a Lead Agency is unsure of where consultation should occur, the central region office in Fresno may be contacted for additional information.

When the SJVAPCD receives a request for consultation, the following procedure will be used:

- Initially, SJVAPCD CEQA staff evaluates all requests for consultation to determine if there is a potential for significant adverse effects to air quality. Projects of concern will get further review.
- The SJVAPCD's policy is to respond to all projects of concern within the review period established by the Lead Agency. When it is unable to meet the stated deadlines, a staff member will notify the Lead Agency and request additional time or explain why the deadline cannot be met.
- For information related to the air quality setting in the SJVAB, the SJVAPCD will reference the most recent version of the Technical Document, by date.
- The SJVAPCD will indicate the appropriate Analysis Level for the project (see Section 5).
- For typical projects, the SJVAPCD will provide a description of potential impacts and mitigation measures.

- At the request of the applicant or Lead Agency, SJVAPCD staff will meet with the project proponents or Lead Agency staff to discuss the potential impacts and mitigation measures.
- For large or unusual projects, that may have a significant potential for air quality impacts, the SJVAPCD will request a meeting with the applicant or his representative to discuss the impacts and possible mitigation measures.
- The SJVAPCD will attend scoping meetings for EIRs, as far as time and work schedules permit and the projects have the potential to generate significant air quality impacts.

2.5.2 Review of Proposed Negative Declarations and Draft EIRs

The SJVAPCD will review Initial Studies/Negative Declarations and Draft EIRs for the following concerns:

- the accuracy of the air quality setting data;
- modeling assumptions, if applicable;
- whether air quality impacts are adequately described;
- the extent to which recommended mitigation measures or other mitigation measures determined by the project proponents are incorporated into the project; and
- whether the SJVAPCD agrees with the overall conclusions regarding impacts on air quality.

SECTION 3 – PRELIMINARY PROJECT REVIEW

3.1 INTRODUCTION

This section provides guidance regarding early consultation on air quality issues between project proponents and local governments. It is meant to assist Lead Agencies in addressing air quality issues at an early stage in the development review process.

3.2 LEAD AGENCY ACTIONS PRIOR TO COMMENCING CEQA

The SJVAPCD encourages local jurisdictions to address air quality issues as early as possible in the development review process. Local jurisdictions should work with applicants on issues such as potential land use conflicts (e.g., odors) and site design to encourage alternatives to the automobile and the use of clean-burning fireplaces. Addressing land use and site design issues while a proposed project is still in the conceptual stage increases opportunities to incorporate measures and desirable modifications to minimize air quality impacts. By the time a project enters the CEQA process, it is often more costly and time-consuming to redesign the project to incorporate mitigation measures. Lead Agency/applicant consultation may be achieved by including a formal step in the jurisdiction's development review procedures or simply by discussing air quality concerns at the appropriate local planning counter when a project proponent makes an initial contact regarding a proposed development. Regardless of the specific procedures a local jurisdiction employs, the objective should be to incorporate features benefiting air quality into a project before significant resources (public and private) have been devoted.

The following air quality considerations warrant particular attention during early consultation with project proponents:

- 1) land use and design measures to encourage alternatives to the automobile and conserve energy;
- 2) development design to eliminate or minimize the use of traditional wood-burning fireplaces;
- 3) land use conflicts and exposure of sensitive receptors to odors, toxics, and criteria pollutants; and
- 4) applicable SJVAPCD rules, regulations, and permit requirements.

Land Use and Design Considerations - Land use decisions are critical to air quality because land use patterns determine transportation needs, and motor vehicles are the largest single category of air pollution in the San Joaquin Valley. The location, intensity, and design of land use development projects significantly influence how people travel. For

example, land use strategies such as locating moderate or high-density development near transit nodes increase opportunities for residents/employees to use transit rather than drive their cars. Similarly, design considerations such as orienting a building entrance towards a sidewalk and/or transit stop increase the attractiveness of walking and transit as alternatives to driving. Some important land use and design strategies to consider include the following:

- Encourage the development of higher density housing and employment centers near existing and planned transit nodes.
- Encourage compact development featuring a mix of uses that locates residences near jobs and services.
- Provide neighborhood retail within or adjacent to large residential developments.
- Provide services, such as restaurants, banks, copy shops, post office, etc., within office parks and other large employment centers.
- Encourage infill of vacant and redevelopment sites.
- Ensure that the design of streets, sidewalks, and bike paths/routes within a development encourages walking and biking.
- Orient building entrances towards sidewalks and transit stops.
- Provide landscaping to reduce energy demand for cooling.
- Orient buildings to minimize energy required for heating and cooling.
- Encourage changes in zoning regulations to allow for upper story residential and/or office uses in neighborhood shopping areas.

Further information regarding land use and design strategies is provided in Section 6. Also, the SJVAPCD has prepared a guidance document on these issues entitled *Air Quality Guidelines for General Plans* (AQQGP). The AQQGP document provides guidance to local officials and staff on developing and implementing local policies and programs to improve air quality to be included in local jurisdictions' general plans.

In order to get ideas and concepts on what constitutes land use and design strategies that would be beneficial for air quality, SJVAPCD CEQA staff recommends visiting the following World Wide Web sites:

- The Center of Excellence for Sustainable Development
(<http://www.sustainable.doe.gov/>)

- The Local Government Commission’s Center for Livable Communities (<http://www.lgc.org/clc/welcome.html>)
- Walkable Communities, Inc. (<http://www.walkable.org/>)
- PLANetizen (<http://www.planetizen.com/>)

Lead Agency staff may also contact their appropriate SJVAPCD CEQA representative for assistance.

Development designs to eliminate or minimize the use of traditional wood-burning fireplaces – The traditional wood-burning fireplaces are assembled on site and integral to the structure of the house. They are masonry (usually brick and/or stone) in design and typically have large fixed openings (hearth) to the fire bed and have dampers above the combustion area in the chimney to limit room air and heat loss when the fireplace is not being used. These “open-hearth” fireplaces usually heat a room by radiation, with a significant fraction of the combustion heat lost in the exhaust gases and through fireplace walls. Moreover, some of the radiant heat entering the room goes toward warming the outside air that is pulled into the residence to make up for that drawn up the chimney. The net effect is that open-hearth fireplaces are usually inefficient heating devices. Indeed, in cases where combustion is poor, where the outside air is cold, or where the fire is allowed to smolder (thus drawing outside air into the residence without producing appreciable radiant heat energy), a net heat loss may occur in a residence using an open-hearth fireplace.

In addition, the inefficient combustion of an open-hearth fireplace means that significant quantities of unburned combustibles (emissions) are produced. Housing developments with many open-hearth “built-in” fireplaces could create a significant deleterious effect on the localized air quality. Conventional “older” wood stoves are almost as inefficient and polluting as the open-hearth fireplace. There are hundreds of chemical compounds in wood smoke, including many that are irritating and potentially cancer causing²². Fireplace/wood stove emissions also include respirable particulate matter (PM-10), carbon monoxide (CO), sulfur oxides (SOx), nitrogen oxides (NOx), and volatile organic compounds (VOC).

Breathing air containing wood smoke contributes to cardiovascular problems; lung diseases like asthma, emphysema, pneumonia, and bronchitis; irritations to the lungs, throat, sinuses, and eyes; headaches; and allergic reactions. Those with the greatest health risk from wood smoke include infants and children, pregnant women, and people with lung or heart disease²³.

²² “Controlling Wood Smoke Pollution”, Washington State Department of Ecology, October 1998 (FA-91-127, rev. 10/98)

²³ *ibid.*

However, fireplace and wood stove technology and products are readily available that can significantly reduce these emissions. For example, an EPA-Certified²⁴ wood stove emits about 40 to 60% less PM-10 and CO and over 65% less VOCs than the open-hearth fireplace. The lowest emissions are achieved using EPA-Certified “Pellet” Stoves²⁵ that emit 80 to 90% less PM-10 and CO than the open-hearth fireplace.

EPA-Certified wood stoves and pellet stoves can also be used in existing open-hearth fireplaces. They are essentially wood stoves designed to be installed or inserted into the fireplace firebox/hearth cavities. If properly installed, their performance is similar to that of their stove counterparts.

Over the last 10 years, the use of natural gas or liquefied petroleum gas (LPG) in place of cordwood has become widespread in fireplaces used for primary and supplemental heating purposes. Three types of gas units have the “fireplace look”. They are gas fireplace inserts, decorative gas fireplaces, and gas fireplace heaters. All have negligible emissions, compared to cordwood fireplaces. Emissions are reduced nearly 100%. Gas fireplace inserts, like certified cordwood and pellet inserts, can be put into existing fireplaces.

Residential fuel combustion poses a localized health risk when trapped at ground level during winter weather conditions. According to the 1996 emissions inventory, residential fuel combustion contributed 12 tons of PM-10, 81 tons of CO, 0.3 tons of SO_x, 6.7 tons of NO_x, and 6.4 tons of VOCs per day in the winter.

A phone survey conducted for the District in November 1997 revealed that 31% of the San Joaquin Valley residents have one or more fireplaces or wood stoves in their home. Of those, two-thirds do not have a fireplace insert, and just under 3% burn only gas. This demonstrates that significant strides could be made in reducing the air quality and health impacts from fireplaces, while maintaining the ambience and aesthetics of a roaring fire in the fireplace.

Land Use Conflicts and Sensitive Receptors - The location of a development project is a major factor in determining whether it will result in localized air quality impacts. The potential for adverse air quality impacts increases as the distance between the source of emissions and members of the public decreases. Impacts on sensitive receptors are of particular concern. Sensitive receptors are facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors.

²⁴ All wood heaters manufactured after July 1, 1988 and sold after July 1, 1990 had to meet Phase II certification as described in Code of Federal Regulations, Title 40, Volume 6, Part 60, Section 60.533.

²⁵ Pellet stoves are fueled with pellets of sawdust, wood products, and other biomass materials pressed into manageable shapes and sizes. These stoves have active air flow systems and unique grate designs to accommodate this type of fuel.

For each of the situations discussed below, the impacts generally are not limited only to sensitive receptors. *All* members of the population can be adversely affected by criteria pollutants, toxic air contaminants, odor, and dust and thus any consideration of potential air quality impacts should include all members of the population. This discussion focuses on sensitive receptors, however, because they are most vulnerable to the effects of air pollution.

Air quality problems arise when sources of air pollutants and sensitive receptors are located near one another. There are several types of land use conflicts that should be avoided:

- Development projects with sensitive receptors in close proximity to a congested intersection or roadway with high levels of emissions from motor vehicles. High concentrations of carbon monoxide, fine particulate matter, or toxic air contaminants are the most common concerns.
- Development projects with sensitive receptors close to an industrial source of toxic air contaminants.
- Development projects with sensitive receptors close to a source of odorous emissions. Although odors generally do not pose a health risk, they can be quite unpleasant and often lead to citizen complaints to the SJVAPCD and to local governments.
- Development projects with sensitive receptors close to a source of high levels of nuisance dust emissions.

Localized development-related air pollution impacts to sensitive receptors generally occur in one of two ways: 1) a (new) source of air pollutants is proposed to be located close to existing sensitive receptors, for example, an industrial facility is proposed for a site near a school; or 2) a (new) development project with sensitive receptors is proposed near an existing source of air pollutants, for example, a hospital is proposed for a site near a refinery.

Specific legislation has addressed these concerns. Two examples specifically addressed by law are:

- Section 42301.6 of the California Health and Safety Code (CH&SC) imparts certain requirements for the SJVAPCD's approval of permits for facilities that would have the potential to emit hazardous air pollutants that would be located within 1000 feet of a school, and
- Section 39003 of the Education Code and Section 21151.4 of the PRC requires Lead Agencies to not approve Negative Declarations or Environmental Impact Reports for any new school facilities which are located within ¼ mile of any potential source of hazardous air emissions unless certain requirements are met.

Preliminary consultation between project proponents and Lead Agency staff can avoid or minimize localized impacts to sensitive receptors. When evaluating whether a development proposal has the potential to result in localized impacts, Lead Agency staff need to consider the nature of the air pollutant emissions, the proximity between the emitting facility and sensitive receptors, the direction of prevailing winds, and local topography. Often, providing an adequate distance, or buffer zone, between the source of emissions and the receptor(s) will mitigate the problem in many cases. This underscores the importance of addressing these potential land use conflicts as early as possible in the development review process.

SECTION 4 – THRESHOLDS OF SIGNIFICANCE

4.1 INTRODUCTION

This section provides SJVAPCD recommended thresholds for determining whether projects have significant adverse air quality impacts as defined by CEQA. Projects demonstrated to have significant adverse impacts are required to mitigate impacts to levels considered less than significant or to prepare an EIR. The thresholds are advisory, but may be adopted administratively or formally by a governing body as recommended by the Governor's Office of Planning and Research (OPR) document *Thresholds of Significance: Criteria for Determining Environmental Significance*. The following gives the basis for the thresholds for all different types of air quality impacts.

4.2 BASIS FOR THRESHOLDS OF SIGNIFICANCE

The SJVAPCD used the OPR definitions of significant environmental effect as a basis to establish air quality Thresholds of Significance for the San Joaquin Valley. Section 15382 of the CEQA Guidelines defines "significant effect on the environment" as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including ... air."

The Air Quality Section of Appendix G of the CEQA Guidelines (Environmental Checklist Form) contains a list of effects that may be deemed potentially significant. These are:

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

For some types of impacts, the criteria listed above are straight forward, but in other cases, they require interpretation. A violation of air quality standards can be predicted for pollutants that can be modeled for atmospheric concentration. This is the case for carbon monoxide for which violations can be predicted using a dispersion model. Ozone, however, is the product of a photochemical reaction that may occur many miles away from the

source of emissions. Although atmospheric ozone models exist, they are only sensitive enough to register changes caused by the largest projects. What is more important for determining ozone impacts is a project's contribution to existing violations of the ozone standard in the SJV. By comparing a project's ozone precursor emissions with emission levels considered important under state law, this impact can be evaluated. One such level is the stationary source emissions offset threshold required by the CCAA. Additionally, the most common measure of significance for toxic air contaminants is an increase in cancer risk based on exposure levels for the nearest sensitive receptor, while odor impacts can be judged significant based on the number of complaints expected for each type of odor producing process. These criteria are described in greater detail below.

While CEQA Guidelines²⁶ state that an ironclad definition of a significant effect is not possible because the significance of an effect may vary with the setting, the SJVAPCD has determined that the setting, as referred to in CEQA, can be defined for air quality. Under California state law²⁷, the SJVAB is defined as a distinct geographic area with a critical air pollution problem for which ambient air quality standards have been promulgated to protect public health. As such, the SJVAPCD resolves that significance thresholds established herein are based on scientific and factual data. Therefore, the SJVAPCD recommends that these thresholds be used by Lead Agencies in making a determination of significance. However, it is still recognized that the final determination of whether or not a project has a significant effect is ultimately within the purview of the Lead Agency pursuant to CEQA Guidelines²⁸.

Basis for Ozone Precursor Thresholds. The entire SJVAB often violates state and federal ozone ambient air quality standards. Therefore, emissions related to an individual project, if substantial, will contribute to the existing violations of the ozone standards. The SJVAPCD defines "substantial contribution" for ozone precursor emissions in terms of CCAA requirements²⁹. The SJVAPCD's New and Modified Stationary Source Review Rule - Offset Requirements for nitrogen oxides (NOx) and volatile organic compounds (VOCs) (in this document, equivalent to reactive organic gases [ROG])³⁰ reflects the CCAA requirements. Rule 2201 sets emissions thresholds above which stationary pollution sources must offset all emissions down to the thresholds. The offset thresholds vary depending on the severity of the pollution problem in each air basin and the type of pollutant. Areas categorized as severe ozone nonattainment areas such as the SJVAB have lower thresholds than areas categorized as having only a moderate ozone problem. The SJVAPCD staff also researched and evaluated many significance thresholds established by other air quality management agencies in California and found that most agencies use the same approach. Although it may be argued that any increase in pollutant emissions in an area with a severe pollution problem may be significant, a reasonable threshold is still

²⁶ CCR §15064(b)

²⁷ California Health and Safety Codes (CH&SC) §41100

²⁸ CCR §15064 (c)

²⁹ CH&SC §40920

³⁰ SJVAPCD Rule 2201, §4.2.3

needed to avoid unnecessarily burdening every project with a requirement to prepare an EIR, which is clearly not intended by CEQA nor desired by the SJVAPCD.

CEQA requires that in evaluating the significance of a project's potential air quality impacts, the Lead Agency shall consider both primary (direct) and secondary (indirect) consequences³¹. Primary impacts include emissions from project construction and emissions from motor vehicles traveling to and from the facility once it is operational. An example of a secondary impact would be the emissions associated with growth that may be facilitated by the expansion of a wastewater treatment plant.

Basis for PM-10 Thresholds. The entire SJVAB is a serious nonattainment area for PM-10 and any addition to the current PM-10 problem could be considered significant. However, the SJVAPCD has established regulations governing various activities that contribute to the overall PM-10 problem. The SJVAPCD has adopted a set of PM-10 Fugitive Dust Rules collectively called Regulation VIII. Several components of Regulation VIII specifically address fugitive dust generated by construction related activities. Therefore, the SJVAPCD has determined that any determination of significance with respect to construction emissions should be based on a consideration of the control measures to be implemented. From the perspective of the SJVAPCD, compliance with Regulation VIII for all sites and implementation of all other control measures indicated in Tables 6-2 and 6-3 (as appropriate, depending on the size and location of the project site) will constitute sufficient mitigation to reduce PM-10 impacts to a level considered less-than-significant.

4.3 THRESHOLDS OF SIGNIFICANCE

This section describes and establishes the SJVAPCD's Thresholds of Significance. These thresholds are recommended for use by Lead Agencies when preparing Initial Studies. If, during the preparation of the Initial Study, the Lead Agency finds that any of the following thresholds may be exceeded and cannot be mitigated, then a determination of significant air quality impact must be made and an EIR is required.

The SJVAPCD identifies thresholds that separate a project's short-term emissions from its long-term emissions. The short-term emissions are mainly related to the construction phase of a project and are recognized to be short in duration. The long-term emissions are mainly related to the activities that will occur indefinitely as a result of project operations. In addition, CEQA³² states that another condition that could establish a project as having a significant effect on the environment is effects that are considered "cumulatively considerable." Thresholds for project construction impacts, project operations, and cumulative impacts are discussed below.

³¹ CCR §15064 (d)

³² PRC §21083(b)

4.3.1 Threshold of Significance for Project Construction Impacts

Pollutants of Concern. A project's construction phase produces many types of emissions, but PM-10 is the pollutant of greatest concern.³³ PM-10 emissions can result from a variety of construction activities, including excavation, grading, demolition, vehicle travel on paved and unpaved surfaces, and vehicle exhaust. Construction-related emissions can cause substantial increases in localized concentrations of PM-10, as well as affecting PM-10 compliance with ambient air quality standards on a regional basis. Particulate emissions from construction activities can lead to adverse health effects as well as nuisance concerns such as reduced visibility and soiling of exposed surfaces. Asbestos can also be of concern during demolition activity associated with construction. The use of diesel powered construction equipment produces ozone precursor emissions and combustion related particulate emissions. Large construction projects lasting many months may exceed the District's annual threshold for NOx emissions and could expose area residents to diesel particulate. Contact the SJVAPCD for analysis recommendations for large construction projects.

Qualitative Approach. The SJVAPCD's approach to CEQA analyses of construction PM-10 impacts is to require implementation of effective and comprehensive control measures rather than to require detailed quantification of emissions (although a Lead Agency may elect to do so - see Section 5 of this document for guidance). PM-10 emitted during construction can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors, making quantification difficult. Despite this variability in emissions, experience has shown that there are a number of feasible control measures that can be reasonably implemented to significantly reduce PM-10 emissions from construction. The SJVAPCD has determined that compliance with Regulation VIII for all sites and implementation of all other control measures indicated in Tables 6-2 and 6-3 (as appropriate, depending on the size and location of the project site) will constitute sufficient mitigation to reduce PM-10 impacts to a level considered less-than-significant.

Common Measures. All control measures listed in Table 6-2 (Regulation VIII Control Measures) are required for all construction sites by regulation. Table 6-3 lists additional measures that may be required due to sheer project size or proximity of the project to sensitive receptors. If all appropriate "enhanced control measures" in Table 6-3 will not be implemented for these very large or sensitive projects, then construction impacts would be considered significant (unless the Lead Agency provides a satisfactory detailed explanation as to why a specific measure is unnecessary). Table 6-3 also lists additional control measures (Optional Measures) that may be implemented if further emission reductions are deemed necessary by the Lead Agency.

³³ The SJVAPCD recognizes that construction equipment also emits carbon monoxide and ozone precursor emissions. However, the SJVAPCD has determined that these emissions may cause a significant air quality impact only in the cases of very large or very intense construction projects. The SJVAPCD will advise Lead Agencies on quantification procedures and significance on a case by case basis.

Demolition Asbestos Impacts. Project construction sometimes requires the demolition of existing buildings at the project site. Buildings often include materials containing asbestos. Airborne asbestos fibers pose a serious health threat if adequate control techniques are not carried out when the material is disturbed. The demolition, renovation, or removal of asbestos-containing materials is subject to the limitations of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulations as listed in the Code of Federal Regulations³⁴ requiring notification and inspection. Most demolitions and many renovations are subject to an asbestos inspection prior to start of activity. The SJVAPCD's Compliance Division in the appropriate region should be consulted prior to commencing any demolition or renovation of any building to determine inspection and compliance requirements. Strict compliance with existing asbestos regulations will normally prevent asbestos from being considered a significant adverse impact.

4.3.2 Thresholds of Significance for Impacts from Project Operations

The term “project operations” refers to the full range of activities that can or may generate pollutant emissions when the development is functioning in its intended use. For projects such as office parks, shopping centers, residential subdivisions, and other indirect sources, motor vehicles traveling to and from the projects represent the primary source of air pollutant emissions. For industrial projects and some commercial projects, equipment operation and manufacturing processes can be of greatest concern from an emissions standpoint. Significance thresholds discussed below address the impacts of these emission sources on local and regional air quality. Thresholds are also provided for other potential impacts related to project operations, such as odors and toxic air contaminants.

(Lead Agencies may refer to Section 5, for guidance on calculating emissions and determining whether significance thresholds for project operations may be exceeded, and thus whether more detailed air quality analysis may be needed.)

Ozone Precursor Emissions Threshold. Ozone precursor emissions from project operations should be compared to the thresholds provided in Table 4-1. Projects that emit ozone precursor air pollutants in excess of the levels in Table 4-1 will be considered to have a significant air quality impact.

Both direct and indirect emissions should be included when determining whether the project exceeds these thresholds. The following total emissions thresholds for air quality have been established by the SJVAPCD for project operations. Projects in the SJVAB with operation-related emissions that exceed these emission thresholds will be considered to have significant air quality impacts.

³⁴ 40CFR Part 61, Subpart M

**Table 4-1
Ozone Precursor Emissions Thresholds
For Project Operations**

Pollutant	Tons/yr.
ROG	10
NO _x	10

Local Carbon Monoxide Concentrations Threshold. Estimated CO concentrations, as determined by an appropriate model, exceeding the California Ambient Air Quality Standard (CAAQS) of 9 parts per million (ppm) averaged over 8 hours and 20 ppm for 1 hour will be considered a significant impact.

Odor Impacts Threshold. 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 SJVAPCD. Any project with the potential to frequently expose members of the public to objectionable odors will be deemed to have a significant impact. 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. Analysis of potential odor impacts should be conducted for the following two situations:

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

The SJVAPCD has determined some common types of facilities that have been known to produce odors in the SJV. These are presented in Table 4-2 along with a reasonable distance from the source where the degree of odors could possibly be significant.

A Lead Agency should use Table 4-2 to determine whether the proposed project, either as a generator or a receiver, would result in sensitive receptors being within the distances indicated in Table 4-2. In addition, recognizing that this list of facilities is not meant to be all-inclusive, the Lead Agency should evaluate facilities not included in the table or projects separated by greater distances than indicated in Table 4-2 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 indicated in Table 4-2, a more detailed analysis, as described in Section 5, should be conducted.

**Table 4-2
Project Screening Trigger 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

Because offensive odors rarely cause any physical harm and no requirements for their control are included in state or federal air quality regulations, the SJVAPCD has no rules or standards related to odor emissions, other than its nuisance rule³⁵. Any actions related to odors are based on citizen complaints to local governments and the SJVAPCD. Lead Agencies can make a determination of significance based on a review of District complaint records as described in Section 5. 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.

For projects locating near a source of odors where there is currently no nearby development *and* for odor sources locating near existing receptors, the determination of significance should be based on the distance and frequency at which odor complaints from the public have occurred in the vicinity of a similar facility.

If a proposed project is determined to be a potentially significant odor source, mitigation measures should be required. For some projects, operational changes, add-on controls, or process changes, such as carbon absorption, incineration, or relocation of stacks/vents can reduce odorous emissions. In many cases, however, the most effective mitigation strategy

³⁵ Rule 4102 of the SJVAPCD's Rules and Regulations and the California Health and Safety Codes Section 41700.

is to provide a sufficient distance, or buffer zone, between the source and the receptor(s). Recent experience has shown that locating upwind from an odor source does not necessarily eliminate potential problems. Even places with reliable prevailing winds experience days with light and variable winds and days with winds opposite prevailing winds related to the passage of storms. Residents in these upwind areas while exposed less frequently may be more sensitive to the odors.

Hazardous Air Pollutants (HAPs). Any project with the potential to expose sensitive receptors (including residential areas) or the general public to substantial levels of toxic air contaminants would be deemed to have a potentially significant impact. This applies to receptors locating near existing sources of toxic air contaminants, as well as sources of toxic air contaminants locating near existing receptors.

Particular attention should be placed on either the location of a facility that has the potential to emit hazardous air pollutants near an existing school or the location of a new school site near facilities that have the potential to emit HAPs. Both scenarios have specific regulations that govern agency actions, as discussed in Section 3.

Proposed development projects that have the potential to expose the public to toxic air contaminants in excess of the following thresholds in Table 4-3 would be considered to have a significant air quality impact. These thresholds are based on the SJVAPCD's Risk Management Policy.

**Table 4-3
Thresholds of Significance for Toxic Air Contaminants**

- | |
|--|
| <ul style="list-style-type: none"> · Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million. · Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index greater than 1 for the MEI. |
|--|

There are currently more than 900 substances classified as hazardous air pollutants by the ARB and USEPA. All projects requiring air quality permits from the SJVAPCD are evaluated for HAP emissions. Examples of projects requiring permits are provided in Figure 1-2. All such projects should be referred to the SJVAPCD as part of the CEQA review process.

Accidental Releases/Acutely Hazardous Air Emissions. 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.

Cumulative Impacts. Any proposed project that would individually have a significant air quality impact (see Section 4.3.2 – Thresholds of Significance for Impacts from Project Operations) would also be considered to have a significant cumulative air quality impact. Impacts of local pollutants (CO, HAPs) are cumulatively significant when modeling shows that the combined emissions from the project and other existing and planned projects will exceed air quality standards. See also Section 5.9.

SECTION 5 – ASSESSING AIR QUALITY IMPACTS

5.1 INTRODUCTION

Section 4 presented the thresholds that the SJVAPCD has determined will have significant effects on air quality if exceeded. This section provides guidance on quantifying and evaluating whether a proposed project or plan³⁶ will exceed the thresholds. It also describes the level of detail necessary for air quality analyses with various types of projects and CEQA documents. Lead Agencies have wide latitude in the level of detail that they use to analyze and describe air quality impacts. The level of analysis presented in this document represents what the SJVAPCD has determined is both reasonable and defensible. A flowchart showing the air quality analysis process for potentially significant pollutants in the SJV except for PM-10 is provided in Figure 5-1.

CEQA Streamlining. The SJVAPCD encourages Lead Agencies to take advantage of streamlining opportunities offered by CEQA in assessing air quality impacts. The use of master EIRs, tiered EIRs, subsequent EIRs/Negative Declarations, etc. allows Lead Agencies to focus on the regional and general air quality impacts early in the process and allows them to address project specific impacts later in the process when project details are known.

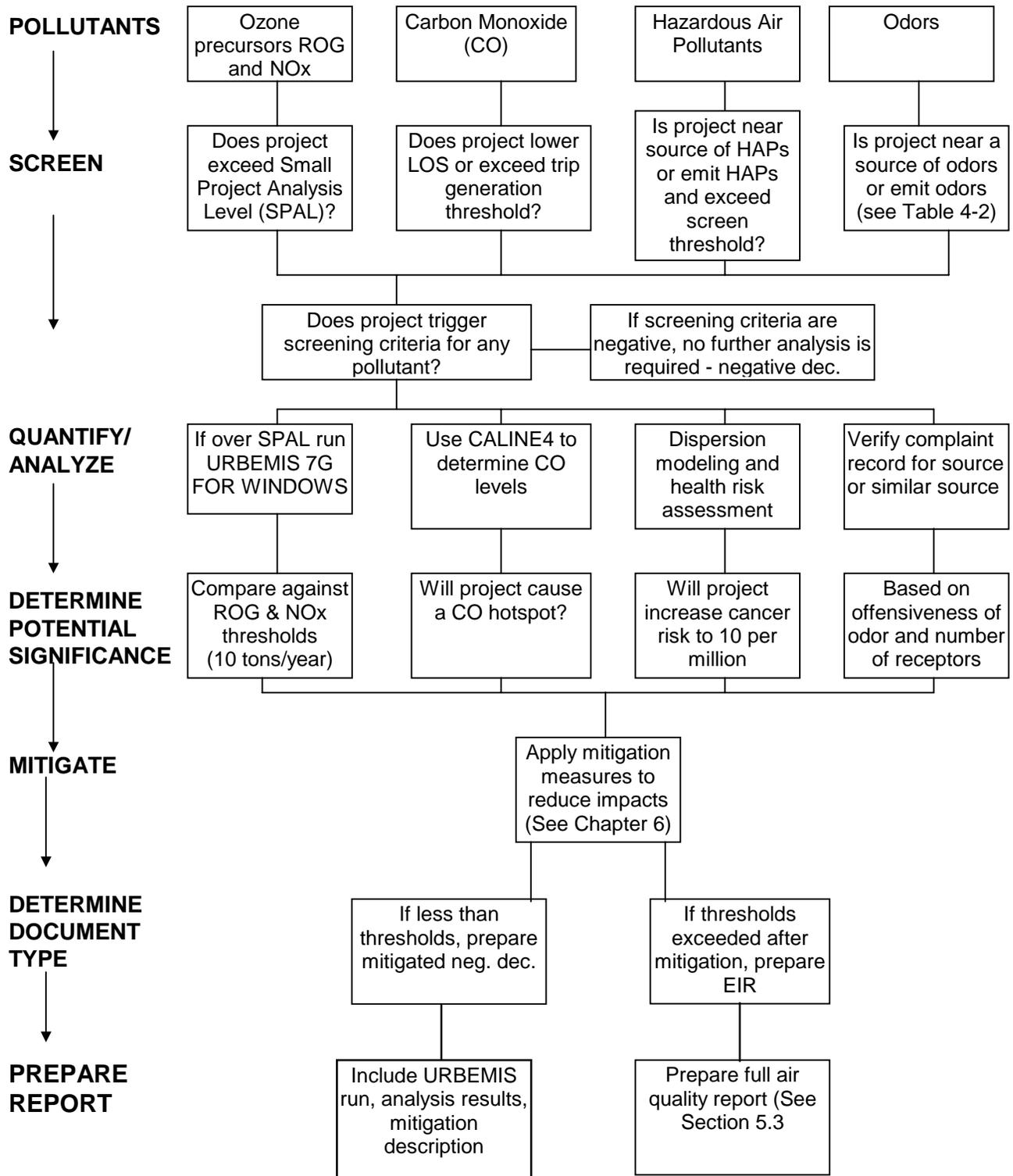
Analysis Levels by Project Size. This section describes a system devised by the SJVAPCD to identify the level of analysis appropriate for a project based on the size and type of the project. The SJVAPCD has pre-determined the size below which many commonly encountered projects will not exceed significance thresholds and still provide an adequate margin to account for site specific differences. Analyses for projects below this level will not need to quantify their emissions. Analyses for projects above the level need a cursory level of emissions quantification to determine if a project will or will not exceed significance thresholds. For projects obviously exceeding the thresholds, Lead Agencies need to prepare a full analysis appropriate for use in an EIR.

Components of a Full Air Quality Assessment. Guidance for completing the various components of a full air quality impact assessment is provided later in this section. The following information and procedures are described:

- Information that should be included on the project's environmental and regulatory setting;
- How to evaluate emissions from project construction;

³⁶ This section discusses how to evaluate the air quality impacts of development projects and plans. For the sake of brevity, this section generally refers only to "project(s)".

**Figure 5-1
Air Quality Analysis Flow Chart
Operational Emissions**



- Methods for calculating emissions from project operations, including:
 - mobile source (or “indirect”) emissions;
 - localized carbon monoxide concentrations;
 - stationary source emissions; and
 - odor impacts.

- How to assess toxic air contaminants.

Analysis Methods for Special Projects. This section also describes analysis methods recommended for environmental documents for general plan updates, specific plans, and some general plan amendments. Unusual projects, and those not previously described, require consultation with the SJVAPCD to determine an appropriate analysis.

Projects Exempt from Environmental Review. Projects exempt from CEQA and projects proposing to adopt a previous environmental document should still be screened to determine if there are any significant impacts that have not been addressed. No discretionary project is exempt if new significant impacts are identified. In some cases, site specific impacts from odors, toxics, and carbon monoxide may only be identified when the precise use is proposed. Lead Agencies should review the screening criteria listed in this section when assessing the adequacy of previous environmental documents or determining the appropriateness of exempting a project.

Quantifying Project Emissions. Quantification is crucial for determining the air quality impacts of most pollutants. The basic method for calculating project emissions is to apply specific emission factors to sources of air pollutants whose magnitude and characteristics are either known or can be estimated. Emission factors may be defined as standardized relationships between particular sources of air pollution, such as motor vehicles or pieces of industrial equipment, and their air pollutant emissions. For example, emission factors for motor vehicles generally specify the amount (in grams) of certain air pollutants emitted, per mile traveled. This section references emission factors and quantification procedures for construction activities, motor vehicles, and stationary sources. Quantification of mobile sources impact is complex and would be difficult for agencies, applicants, and consultants to successfully calculate manually. For this reason, the District recommends the use of URBEMIS 7G for Windows³⁷ to quantify most project emissions.

This section also describes methods for evaluating air quality impacts that are not easily quantified, such as impacts associated with objectionable odors.

Once the impacts of a proposed project have been identified, the Lead Agency must determine whether or not the project would have a significant adverse impact on the

³⁷ URBEMIS 7G for Windows is the latest iteration of URBEMIS modeling program that is used to estimate emissions from motor vehicles associated with development projects. Version 7G for Windows also estimates emissions from area sources and includes estimated emissions reductions attributable to mitigation measures (listed in Tables 6-5 and 6-6).

environment. Significance criteria discussed in Section 4 of this GAMAQI should be used in making this determination. For any potentially significant impacts, mitigation measures must be incorporated into the project to reduce the impact(s), in so far as possible, to a level of less than significant. Section 6 provides guidance on selecting mitigation measures.

5.2 ANALYSIS OF PROJECTS REQUIRING SJVAPCD PERMITS

CEQA Guidelines³⁸ states a preference for the jurisdiction with the broadest authority to accomplish CEQA review when more than one public agency will be approving discretionary permits for a project. Frequently, projects requiring SJVAPCD permits must first obtain a land use approval from a city or county. In those cases, the SJVAPCD is a Responsible Agency and the city or county is the Lead Agency. If no other agencies have discretionary actions regarding the project, the District will take Lead Agency role. District processes as Lead Agency are detailed in the District's *Environmental Review Guidelines*.

CEQA also requires that the project description include a list of agencies that are expected to use the EIR in their decision-making, and a list of the approvals for which the EIR will be used³⁹. If the project will require a permit from the SJVAPCD, this should be cited in the project description section of the EIR.

Many industrial projects and some commercial projects require SJVAPCD permits. (See Figure 1-2 for examples of projects requiring permits.) Lead Agencies must examine all reasonably foreseeable air quality impacts of these projects in their environmental documents. The analysis must address direct emissions from the permitted equipment or processes used at the site as well as any indirect emissions caused by motor vehicle trips, unpermitted stationary sources, or area sources related to the project. Generally, new permitted sources (emission units) emitting more than two pounds per day of NOx, and VOC must provide best available control technology, and all sources emitting more than the New Source Review Offset Thresholds must offset all emissions in excess of the thresholds. These sources thus cannot exceed the numeric thresholds of significance for ozone precursors.⁴⁰ Therefore, review of these projects should concentrate on their potential to generate local impacts such as hazardous air pollutants, odors, and pollutant hot spots. For more information on this topic, contact the SJVAPCD Small Business Assistance center in each region (see Appendix B).

Projects Exempt from SJVAPCD Permits. Stationary sources⁴¹ that are exempt from SJVAPCD permit requirements because they fall below emission thresholds for permitting will normally not be considered to have a significant air quality impact from their permitted stationary equipment. However, the Lead Agency can, and should, make an

³⁸ CCR §15051(b)(1)

³⁹ CCR §15124(d)

⁴⁰ CCR §15064(i)

⁴¹ Stationary sources are defined in SJVAPCD Rule 2201 as any building, structure, facility, or installation which emits, or may emit any affected pollutant directly or as a fugitive emission.

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.

SJVAPCD assuming Lead Agency role. CEQA, generally, requires Responsible Agencies to use the environmental document prepared by the Lead Agency. However, CEQA Guidelines⁴² list three occasions when a Responsible Agency must assume the Lead Agency role:

- (1) The Lead Agency did not prepare any environmental documents for the project and the statute of limitations for challenging the project has elapsed;
- (2) When a subsequent EIR is required and the Lead Agency has granted final approval of the project, and the statute of limitations has expired;
- (3) The Lead Agency's environmental document is inadequate, and the Responsible Agency was not consulted, and the statute of limitations has expired.

In addition, there are occasions in which discretionary projects requiring SJVAPCD permit approval do not require discretionary approval from any other public agency. In these cases, the SJVAPCD would take on the duties of Lead Agency.

5.3 QUANTITATIVE EMISSIONS ANALYSIS LEVEL

This section describes the level of quantitative emissions analysis recommended for various sizes and types of land use projects. The SJVAPCD has established a three-tiered approach to determining significance related to a project's quantified ozone precursor emissions. Each tier or level requires a different degree of complexity of emissions calculation and modeling to determine air quality significance as described below. Table 5-1 summarizes the requirements for each level of analysis. Each level also requires the project to be analyzed for toxic air contaminants, hazardous materials, and odors. The potential for asbestos emissions must also be considered. For asbestos, size or complexity of the project does not matter. Any project that includes demolition or renovation of existing buildings needs to contact the SJVAPCD's Asbestos Coordinators at the appropriate SJVAPCD regional office.

Small Project Analysis Level (SPAL). The SJVAPCD pre-calculated the emissions on a large number and types of projects to identify the level at which they have no possibility of exceeding the emissions thresholds listed in Table 4-1. Table 5-2 provides this information in terms of vehicle trips required to exceed the SPAL threshold for five general land use categories⁴³. Table 5-3 lists sizes of various specific development types meeting these criteria. Projects falling under these size thresholds qualify for what the SJVAPCD refers to as the Small Project Analysis Level (SPAL). No quantification of ozone precursor

⁴² CCR §15052(a)

⁴³ Land use category descriptions are provided in the Institute of Transportation Engineers (ITE) Trip Generation report and in the URBEMIS 7G for Windows User's Guide.

emissions is needed for projects less than or equal to the sizes listed, however, other factors, such as toxic air contaminants, hazardous materials, asbestos, and odors still need to be analyzed. The SJVAPCD still wishes to review SPAL projects. Initial studies should note that the project is a SPAL project and provide a brief justification for the finding of no significant air quality impacts. For a multi-use project, if its combined trip generation rate exceeds the lowest applicable trip threshold from Table 5-2, an air quality analysis as described for the Cursory Analysis Level (CAL) should be prepared.

Note that even if a project is on the SPAL list, it does not relieve the Lead Agency from assessing a project for other potential significant air quality impacts. Some industrial and commercial projects may have impacts related to toxic air contaminants, hazardous materials, or odors. Projects containing sensitive receptors such as residential subdivisions, schools, hospitals, and so on must be assessed for exposure to pollutants from existing or planned industrial and commercial development. Any project that includes demolition or renovation of existing buildings needs to contact the SJVAPCD's Asbestos Coordinators at the appropriate SJVAPCD regional office.

When a project falls under the SPAL, the Lead Agency should use the information in the initial study checklist, or whatever format used, to justify a finding of less than significant air quality impacts. The initial study should also verify that no sensitive receptors would be exposed to substantial pollutant concentrations as a result of the project.

**Table 5-1
Project Analysis Requirements**

Analysis Level	Analysis Requirements
Small Project Analysis Level (SPAL)	<ul style="list-style-type: none"> • Verify project qualifies as a SPAL project (Table 5-2, 5-3). • Examine area surrounding project site for sources of toxic air contaminants, hazardous materials, and odors. • If industrial or commercial; verify that project is not a source of toxic air contaminants, hazardous materials, and odors. • Mitigate cumulative impacts with measures appropriate for the site. • If demolition or renovation of existing buildings, contact the District for asbestos requirements.
Cursory Analysis Level (CAL)	<ul style="list-style-type: none"> • Conduct URBEMIS 7G for Windows⁴⁴ model run. • Screen project for CO impact⁴⁵; run CALINE4⁴⁶ if required. • Perform screening analysis of potential toxics, hazardous materials, and odor impacts if near a potential source or if project is a potential source of these pollutants. • If demolition or renovation of existing buildings, contact the District for asbestos requirements. • Identify mitigation measures and quantify with URBEMIS 7G for Windows when feasible. • If project is identified as potentially significant using the above screening methods, prepare full analysis.
Full Analysis Level (FAL)	<ul style="list-style-type: none"> • Conduct URBEMIS 7G for Windows model run for projects. • Conduct Direct Travel Impact Model (DTIM)⁴⁷ model run for large plans when a transportation model is available. • Screen project for CO impact/run CALINE4 if required • Perform screening analysis for potential toxics, hazardous materials, and odors. • If project is identified as a potentially significant source of toxic or hazardous pollutants, prepare a health risk assessment.

⁴⁴ URBEMIS for Windows is available on ARB's website (<http://www.arb.ca.gov/urbemis7/urbemis7.htm>)

⁴⁵ The SJVAPCD recommends using the Transportation Project-Level Carbon Monoxide Protocol (CO Protocol) developed by UC Davis in December 1997. The program deals with project-level air quality analysis needed for federal conformity determinations, NEPA, and CEQA. The CO Protocol is available on Caltrans' website (<http://www.dot.ca.gov/hq/env/air/extsoft.htm>).

⁴⁶ CALINE4 (California LINE Source Dispersion Model), is the standard modeling program used by Caltrans to assess air quality impacts near transportation facilities, in the rare cases when the screening procedures of the CO Protocol fail. It is based on the Gaussian diffusion equation and employs a mixing zone concept to characterize pollutant dispersion over the roadway. The SJVAPCD recommends the use of CL4 (Version 1.31). CL4 is a user interface designed to work with the CO Protocol, and can only be used for CO analysis. The program requires Windows 95/NT or higher and is available on Caltrans' website (<http://www.dot.ca.gov/hq/env/air/extsoft.htm>).

	<ul style="list-style-type: none"> • Prepare an air quality report containing: <ul style="list-style-type: none"> ▪ existing air quality conditions; ▪ analysis of project air quality impacts; mitigation measures; and ▪ results of modeling as technical appendices.
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Table 5-2
Small Project Analysis Level (SPAL) in Vehicle Trips

Land Use Category	Project Size⁴⁸
Residential Housing	1,453 trips/day
Commercial	1,673 trips/day
Office	1,628 trips/day
Institutional	1,707 trips/day
Industrial	1,506 trips/day

Table 5-3 (a)
Small Project Analysis Level (SPAL) by Project Type

Land Use Category	Project Size
Housing	
Single Family	152 Units
Apartments, Low Rise	220 Units
Apartments, High Rise	345 Units
Condominiums, General	270 Units
Condominiums, High Rise	335 Units
Mobile Homes	330 Units
Retirement Community	460 Units

⁴⁷ The Direct Travel Impact Model (DTIM) was developed by Caltrans in the late 1970's and is used in the State of California to calculate amounts of air pollutant emitted from motor vehicles and fuel consumption. The DTIM analysis is based on travel data produced by the Regional Transportation Model and on emission factors from the EMFAC Model. Some jurisdictions use the mobile emission inventory model MVEI7G when DTIM is not available. MVEI7G is available from the California Air Resources Board at www.arb.ca.gov/msei/mvei/mvei.htm.

⁴⁸ The project size numbers, and the trip generation numbers in Tables 5-2 and 5-3 were generated with URBEMIS 7G for Windows using default settings and are based on 90 percent of the ozone precursor emission thresholds. For definitions of land use categories listed above, see the URBEMIS 7G for Windows User's Guide or the latest edition of the Institute of Transportation Engineers, Trip Generation Manual.

Table 5-3 (b)
Small Project Analysis Level (SPAL) by Project Type

Land Use Category	Project Size
Office	
General Office Building	110,000 ft ²
Office Park	106,000 ft ²
Government (Civic Center)	57,000 ft ²
Government Office Building	23,000 ft ²
Medical Office Building	52,000 ft ²

Table 5-3 (c)
Small Project Analysis Level (SPAL) by Project Type

Land Use Category	Project Size
Retail	
Free Standing Discount Store	61,000 ft ²
Regional Shopping Center < 57,000	11,000 ft ²
Discount Club Store	40,000 ft ²
Supermarket	9,000 ft ²
Convenience Market (w/o gas pumps)	2,000 ft ²
Convenience Market (w/ gas pumps)	2,000 ft ²
Gasoline/Service Station	10 pumps
Quality Restaurant	20,000 ft ²
Restaurant (high turnover sit-down)	9,000 ft ²
Fast Food Restaurant	2,000 ft ²
Day Care Center	22,000 ft ²
Bank (w/ drive-through)	10,000 ft ²
Racquet/Health Club	44,000 ft ²
Hotel	200 Units
Motel	170 Units

Table 5-3 (d)
Small Project Analysis Level (SPAL) by Project Type

Land Use Category	Project Size
Industrial ⁴⁹	
General Light Industry	510,000 ft ²
Heavy Industry	920,000 ft ²
Industrial Park	370,000 ft ²
Manufacturing	400,000 ft ²

Table 5-3 (e)
Small Project Analysis Level (SPAL) by Project Type

Land Use Category	Project Size
Institutional	
Hospital	78,000 ft ²
Elementary School	1875 students
Junior High School	1680 students
High School	1325 students
Junior College (2 year)	1100 students
University/College (4 year)	716 students
Place of Worship	48,000 ft ²

Cursory Analysis Level (CAL). Projects above the SPAL and most multi-use projects require a cursory air quality analysis to determine if they will exceed air quality significance thresholds after mitigation. A cursory analysis includes emission quantification, preliminary CO screening, and qualitative analysis of potential construction, toxics, and odor impacts. The SJVAPCD recommends using the URBEMIS 7G for Windows program to calculate project area source and mobile source emissions and for identifying mitigation measures to reduce impacts.

If a project has over a five year projected build-out, analyses should be done for the final build-out year (using the nearest default year in URBEMIS) and one intermediate year (using the URBEMIS default year nearest to the midpoint of projected build-out of the project). URBEMIS 7G for Windows provides the following default years: 2000, 2001, 2002, 2003, 2004, 2005, 2010, 2015, and 2020. If projected emissions exceed thresholds for any analysis year, the impact is considered to be significant and a full analysis is required.

⁴⁹ The SPAL levels for industrial sources are based only on indirect source emissions. Emissions from SJVAPCD regulated stationary sources are not included.

If there is a possibility that the project will result in a substantial increase in traffic congestion, it should be screened for potential CO hot spots using the CO Protocol⁵⁰ described in section 5.6.3 of this document. The area around the project site should be examined for the presence of potential toxic pollution sources and odor sources. When analyzing industrial projects, the impacts of potential toxic emissions and odors on any sensitive receptors near the project site must be identified. Applicants for any project that includes demolition or renovation of existing buildings need to contact the SJVAPCD's Asbestos Coordinators at the appropriate SJVAPCD regional office.

The SJVAPCD recommends that the results of the cursory analysis be presented in an air quality report that would be included in the environmental documentation supporting the negative declaration. The air quality report should include a brief air quality setting, the emissions analysis results, results of other air analyses, and a description of mitigation measures used to reduce the project's emissions. Provide either full documentation of calculations with justification of mitigation measures used when using manual method of quantification or an URBEMIS 7G for Windows detailed printout with descriptions of any modifications to URBEMIS 7G for Windows defaults (with justification for reduction amount).

Full Analysis Level (FAL). If the cursory analysis demonstrates that projected emissions from a project will be greater than the SJVAPCD's thresholds after mitigation or the project is of such magnitude that the ozone precursor thresholds would be obviously exceeded, a full analysis should be prepared. A full analysis will consist of the information applicable to the cursory analysis plus a thorough discussion of the air quality impacts and air quality environmental setting, as described in Section 5.4 of this document. Projects found to exceed CO screening thresholds may also require CO hotspot analysis using the CALINE4 dispersion model⁵¹. Projects containing toxic emission sources and those projects potentially exposed to toxic emissions may require a toxics risk assessment. Risk assessments require dispersion modeling to determine cancer risk for the nearest exposed individual. Procedures for addressing toxic air contaminants and hazardous air pollutants are found later in this section.

5.4 ENVIRONMENTAL SETTING

One purpose of CEQA is to publicly disclose all environmental effects of a project, so the public is informed, and decision-makers make decisions based on a thorough understanding of a project's impacts. Information such as environmental setting, existing air quality conditions, regulatory setting, etc. are important in fulfilling this "spirit" of CEQA. The public deserves to understand the air quality implications of all projects approved in this air basin.

⁵⁰ See footnote 45

⁵¹ Available at Caltrans' website (<http://www.dot.ca.gov/hq/env/air/extsoft.htm>)

Setting for Full Analysis Level (FAL) Projects. Lead Agencies should prepare a full air quality analysis for all projects determined to either obviously exceed SJVAPCD thresholds for significant air quality impacts or found to exceed the thresholds during cursory analysis and that cannot mitigate air quality impacts to less than significant levels. A Full Analysis Level report should contain the information described above for a Cursory Analysis Level report plus the environmental setting information described below.

- **Climate and Topography.** Provide a description of the influence of climate and topography on a project's impacts on local and regional air quality. A sample description of the SJVAB's climate and topography is located in the Technical Document and may be used as a basis in EIRs prepared for any project in the SJVAPCD.
- **Regulatory Environment.** Describe the regulatory requirements in the SJVAPCD. A sample description of the regulatory environment is located in the Technical Document. EIRs or MNDs with a full analysis should use this information.
- **Prevention of Significant Deterioration (PSD) Consideration.** The analysis should place special emphasis on air quality resources that are rare or unique to the region and would be affected by the project⁵². Regulatory requirements identify areas that are pristine and classified as Class I airsheds. These airsheds are subject to specific standards, e.g. Prevention of Significant Deterioration⁵³ requirements. Within the SJVAPCD, the Kings Canyon and Sequoia National Parks and Ansel Adams, Kaiser, John Muir, and Domeland Wilderness Areas are Class I areas. Any project proposed in the vicinity of one of these areas should note its proximity to a Class I area in the description of the project setting.
- **Air Quality Standards.** Identify state and federal AAQS for all criteria pollutants. Provide the air quality attainment status for the criteria pollutants. This data can be found in the Technical Document.
- **Ambient Air Quality.** Summarize ambient air quality, including data for at least the last three years from the air quality monitoring station(s) closest to the project site. The setting should also include basin-wide data for ozone given its regional characteristics. A sample description of existing air quality conditions is located in the Technical Document. The Technical Document also provides ambient air quality monitoring data. A Lead Agency should follow the sample format, utilizing data from the nearest monitoring station(s) as appropriate.
- **Existing Emissions.** Describe any existing emissions from the project site, if applicable. Existing emissions can be quantified using URBEMIS 7G for Windows or

⁵² CCR §15125 (a)

⁵³ Code of Federal Regulations (40CFR 52.21)

with manual methods described later in this section. Include any SJVAPCD permitted stationary sources of emissions that are being eliminated.

- **Sensitive Receptors.** Identify any sensitive receptors located near the project site. For CEQA purposes, a sensitive receptor is generically defined as a location where human populations, especially children, seniors, and sick persons are found, and there is reasonable expectation of continuous human exposure according to the averaging period for the AAQS (e.g., 24-hour, 8-hour, 1-hour). These typically include residences, hospitals, and schools. Locations of sensitive receptors may or may not correspond with the location of the maximum off-site concentration. The location of sensitive receptors should be explained in terms that demonstrate the relationship between the project site and potential air quality impacts (e.g., proximity, topography, or upwind or downwind location).

The analysis should also identify reasonably foreseeable sensitive receptors. This would include future receptors if development is pending, as well as potential receptors that could reasonably be sited nearby based on permitted zoning or land use designations. Land uses in the vicinity of the project site should be extensively described in the Land Use Section of an EIR. If no sensitive receptors are in the project vicinity, the Land Use Section may be referenced with an appropriate reference to the lack of sensitive receptors. If sensitive receptors are in the project vicinity, the Land Use Section may also be referenced, but the description of any sensitive receptors should be expanded upon as necessary for air quality impact analysis purposes.

- **Sources of Air Pollutants in Project Vicinity.** Identify sources of air pollutants on or near the project site. The description of existing air pollution sources should include criteria pollutants, toxic air contaminants, and nuisance emissions such as odors and dust. More detailed information regarding existing emissions, including emissions of odors and toxic air contaminants, may be obtained by contacting the SJVAPCD.
- **Transportation System.** Describe the transportation system serving the project site. Discuss traffic conditions, including traffic volumes and levels of service; transit service; and other relevant transportation facilities such as bicycle facilities, shuttle services, telecommuting centers, etc. The discussion of the existing transportation system should describe both current conditions and future conditions with the project. Much of this information may be located in the Traffic and Circulation section of the EIR (or Initial Study). Many EIR traffic and circulation sections, however, do not adequately describe bicycle facilities, telecommuting centers, and other alternative transportation forms. The traffic and circulation information may be referenced and/or summarized, but any additional information relative to non-motorized trip reduction alternatives not discussed should be described as necessary and appropriate for the project in the air quality setting.

5.5 EVALUATING CONSTRUCTION EMISSIONS

The SJVAPCD recommends separating emissions occurring in the construction phase of a project from emissions occurring in the operational phase for analysis purposes. The reason for this separation is that construction produces only temporary impacts while the operational phase will produce emissions indefinitely into the future. Although construction activities can produce substantial emissions and can represent a significant air quality impact, the effect is not permanent.

Types of Construction Emissions. Construction-related emissions come from a variety of activities including:

- 1) grading, excavation, road building, and other earth moving activities;
- 2) travel by construction equipment, especially on unpaved surfaces;
- 3) exhaust from construction equipment;
- 4) architectural coatings; and
- 5) asphalt paving.

Demolition and renovation of buildings also generate PM-10 emissions, and is of particular concern if the building(s) contain any asbestos-bearing materials⁵⁴. Off-road construction equipment is often diesel powered and can be a substantial source of NOx emissions.

Evaluating PM-10 Emissions from Construction. PM-10 emissions from construction activity can vary considerably depending on factors such as the level of activity, the specific operations taking place, and weather and soil conditions. The SJVAPCD emphasizes implementation of effective and comprehensive control measures rather than detailed quantification of construction emissions. The SJVAPCD recommends that Lead Agencies consider the size of the construction area and the nature of the activities that will occur, and require the implementation of all feasible control measures (as indicated in Table 6-3).

PM-10 Emission Quantification. If a Lead Agency elects to quantify construction emissions, URBEMIS 7G for Windows can be used to quantify PM-10 emissions associated with grading and earthmoving. Manual calculation methods using generalized emission factors are available. Those wishing to manually calculate construction emissions should refer to the URBEMIS 7G for Windows Users Guide⁵⁵ or a report prepared under

⁵⁴ A CAL-OSHA qualified asbestos survey of the existing structure is required, prior to any renovation or demolition activity. If you have any questions concerning asbestos related requirements, please contact the SJVAPCD Asbestos Coordinator at the appropriate SJVAPCD Regional office (see Appendix B).

⁵⁵ Copies of URBEMIS 7G for Windows Users Guide and program can be obtained from ARB's website (<http://www.arb.ca.gov/urbemis7/urbemis7.htm>)

contract to the South Coast Air Quality Management District titled *Improvement of Specific Emission Factors (BACM Project No. 1), Final Report* by Midwest Research Institute, March 29, 1996. These factors may be used at a Lead Agency's discretion. The California Air Resources Board (ARB) indicates that these numbers will be incorporated into the U.S. Environmental Protection Agency's (EPA's) emission factors document *Compilation of Air Pollutant Factors (AP-42)*.

Quantifying Demolition Emissions. Project construction sometimes involves the demolition of existing buildings. Demolition also produces PM-10 emissions. PM-10 emissions from demolition activities may be estimated using URBEMIS 7G for Windows. However, the Lead Agency can also manually quantify PM-10 emissions from demolition using the following emission factor: 0.00042 lbs. PM-10 per cubic feet of building volume.⁵⁶

An important note is that buildings often include building materials containing asbestos. Airborne asbestos fibers pose a serious health threat if adequate control techniques are not carried out when the material is disturbed. The demolition or renovation of asbestos-containing building materials is subject to the limitations of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulations as listed in the Code of Federal Regulations⁵⁷ requiring notification and inspection. Most demolitions and many renovations are subject to a CAL-OSHA Certified asbestos inspection prior to start of activity. The SJVAPCD's Asbestos Coordinator in the appropriate region should be consulted prior to commencing demolition or renovation of any building to determine inspection and compliance requirements.

Analyzing ROG and NOx Emissions from Construction Equipment. Very large construction projects may exceed the annual thresholds for ROG and NOx emissions. The SJVAPCD will recommend quantification methods for these projects on a case by case basis. In some cases, URBEMIS 7G for Windows may be used to estimate the emissions. Complex projects may require the use of specific emission factors available from the SJVAPCD.

5.6 EVALUATING EMISSIONS FROM PROJECT OPERATIONS

Project operations refer to activities that will occur at a project site when construction is complete and the site has been occupied with its intended use. Emissions from project operations can be divided into three main categories: indirect sources; area sources; and stationary sources. Indirect sources are defined as any building, facility, structure, or property that attracts or generates mobile source activity (autos and trucks). This includes shopping centers, employment sites, schools, housing developments, etc. Area sources are sources that individually emit small quantities of air pollutants, but which cumulatively may represent significant quantities of emissions. Water heaters, fireplaces, wood heaters,

⁵⁶ South Coast Air Quality Management District, *CEQA Air Quality Handbook*, April 1993.

⁵⁷ 40CFR Part 61, Subpart M

lawn maintenance equipment, and application of paints and lacquers are examples of area source emissions. Stationary or point sources are equipment or devices operating at industrial and commercial facilities that directly emit air pollutants. Examples of facilities with stationary sources include manufacturing plants, oil refineries, sand and gravel operations, print shops, and gasoline stations.

Air quality impact assessments should evaluate all three categories of emissions when determining impacts from project operations. This section describes methods recommended by the SJVAPCD to accomplish this task. In addition, this section discusses procedures for evaluating impacts related to odor problems, emissions of toxic air contaminants, and accidental releases of hazardous/toxic materials

5.6.1 Calculating Area Source Emissions

The SJVAPCD recommends that URBEMIS 7G for Windows be used to calculate area source emissions. The program allows you to estimate area-source emissions for natural gas fuel consumption from space and water heating, wood stove and fireplace combustion emissions, landscape maintenance equipment, and consumer products. Consumer products, includes only reactive organic compound emissions released through the use of products such as hair sprays and deodorants. Due to the seasonal nature of fireplace and wood stove emissions, they should not be used in determining if a project will exceed ozone precursor thresholds.

The URBEMIS 7G for Windows program provides default assumptions for evaluating area source emissions for projects in the San Joaquin Valley. When the Lead Agency or consultant uses values other than default values, the air quality report should justify the assumptions.

5.6.2 Calculating Mobile Source Emissions

As noted above, virtually all land use development projects result in indirect source emissions due to the motor vehicle trips generated by the project. The following discussion describes how to calculate these emissions.

URBEMIS 7G for Windows. The SJVAPCD recommends using the program URBEMIS 7G for Windows for calculating indirect emissions from most development projects. The exceptions are general plan updates, large specific plans, and large general plan amendments, for which the analysis methods are described later in this section. URBEMIS 7G for Windows provides a reasonable estimate of project emissions considering the complexity of the factors affecting mobile source emissions. URBEMIS 7G for Windows can be run on any Windows™ 3.x/9x (it will not currently work with Windows NT). URBEMIS 7G for Windows uses EMFAC7G emission factors and Institute of Transportation Engineers (ITE) and San Diego Association of Governments trip generation rates. The program provides default values for all modeling parameters. Some of the

parameters are specific to several regions within California, including the San Joaquin Valley. However, where project-specific values for parameters, including trip generation, trip length, trip speed, vehicle fleet mix, percentage of cold starts, and temperature, are available they should be used. The source(s) of any project-specific data should be described and fully supported. The user may use the default values if project specific values are not available.

URBEMIS 7G for Windows calculates emissions of reactive organic gases (ROG), nitrogen oxides (NO_x), carbon monoxide (CO) and respirable particulate matter (PM-10) and provides results either in pounds per day (summer or winter) or tons per year. Whereas the SJVAPCD's Thresholds of Significance are in tons per year, the District recommends any URBEMIS 7G for Windows' air quality analysis report be submitted in tons per year.

Because URBEMIS 7G for Windows includes more current emission factors (EMFAC7G), as well as other improvements, older versions of URBEMIS should not be used to estimate mobile source emissions. A new version of URBEMIS using EMFAC2000/2001 emission factors is under development. The SJVAPCD recommends using the newest version available. Consult the SJVAPCD web site or contact a SJVAPCD CEQA representative to determine the current version.

- **URBEMIS 7G for Windows - Mobile Source Emission Factors.** The source of emission factors for most California motor vehicle emission models is the ARB program EMFAC. EMFAC calculates vehicle emissions based on average emissions per each vehicle type (light duty passenger cars, light duty trucks, medium duty trucks, heavy-duty diesel, etc.), vehicle speed, starting conditions, temperature, year, and other factors. EMFAC generates an output in grams per mile of the various pollutants. The output can then be used in other models such as URBEMIS and DTIM or in manual calculations to arrive at project level emissions. ARB periodically revises EMFAC. At the time of this writing, the most current version is EMFAC7G.
- **URBEMIS 7G for Windows - Default Assumptions for Emission Calculations.** Calculations of mobile source emissions are dependent on a large number of variables, **but there are several that are critical.** These variables are trip length, average speed, and trip generation rates. Another variable, vehicle fleet mix, is important for projects that may have a larger or smaller share of truck traffic than average. URBEMIS 7G for Windows contains default values for these variables, but they are very general. The defaults may be used; however, the SJVAPCD encourages the use of project specific data whenever available. Typically, this information can be found in the results of project specific traffic studies. Often, shopping center developers have trip generation data and trip length estimates based on data collected from similar centers within the city or region that are superior to default values. When the Lead Agency or consultant uses other than default values, the air quality report should justify the assumptions.
- **URBEMIS 7G for Windows - Accounting for Internal Trips.** Transportation analyses for projects consisting of two or more land uses often adjust the number of anticipated

new vehicle trips to account for internal trips. These adjustments (or “capture rates”) reflect the fact that some trips at multi-use projects will occur internally to the project. As a result, the total number of new vehicle trips associated with the project would be less than the sum of the trips expected from all of the individual land uses. URBEMIS 7G for Windows contains a new component that accounts for internal trips and allows the user to change assumptions. Traffic studies for such projects may be used to identify internal trip capture rates. The air quality analysis should include a clear explanation of all capture rate assumptions unless the URBEMIS 7G for Windows default numbers are used.

- **URBEMIS 7G for Windows - Accounting for Pass-by Trips.** Traffic studies for commercial projects often distinguish between primary trips and pass-by and diverted linked trips.⁵⁸ The air quality analysis for such projects may include emission reductions from pass-by and diverted linked trips. The emissions from these trips will be lower than for primary trips (due to shorter trip lengths), so emissions are less. URBEMIS 7G for Windows contains a component that accounts for these emissions. Adjustments can be made to trip length and cold start/hot start assumptions for pass-by and diverted linked trips. Assumptions regarding pass-by and diverted linked trips should be clearly identified and the underlying rationale explained.

Manual Calculations. Mobile source emissions associated with land use development may also be calculated manually. Manual calculation, however, is not recommended by the SJVAPCD. Never the less, if the Lead Agency or applicant wishes to manually calculate such emissions, a methodology is available from the Bay Area Air Quality Management District⁵⁹. For this manual calculation, it is necessary to provide the following inputs: trip generation rate, average trip length and emission factors (varying by average vehicle speed and analysis year). The Lead Agency or applicant should provide, for review by the SJVAPCD, thorough documentation and justification for all assumptions used in manual calculation.

5.6.3 Estimating Carbon Monoxide Concentrations

Emissions and ambient concentrations of carbon monoxide have decreased greatly in recent years. These improvements are due largely to the introduction of lower emitting motor vehicles and cleaner burning fuels. The last exceedance of either the state or national CO standard recorded at any of the SJVAB’s monitoring stations was in 1991. At present, all areas within the SJVAPCD have attained the federal CO standard and are attainment or unclassified for the state CO standard.

⁵⁸ Primary trips are trips made specifically to visit a particular facility. Pass-by trips are trips made as intermediate stops on the way to a primary trip destination. Diverted linked trips are trips attracted from roadways near a facility, but which require a diversion from the roadway to another roadway to access the facility.

⁵⁹ Bay Area Air Quality Management District can be reached at (415) 771-6000 or <http://www.baaqmd.gov/>.

Reasons for CO Analysis. Despite the progress and success in achieving CO standards, localized CO concentrations still warrant concern in the SJV and should still be assessed in environmental documents. The reasons for this are twofold. First, state and federal laws require the SJVAB to attain and **maintain** ambient air quality standards. The SJVAPCD must ensure that increased motor vehicle use and congestion do not nullify the great strides that have been made with respect to ambient concentrations of CO. Secondly, the SJVAPCD must safeguard against localized high concentrations of CO that may expose nearby sensitive receptors but not be recorded at monitoring sites. Because elevated CO concentrations are often localized, heavy traffic volumes and congestion can lead to high levels of CO, or “hotspots”, while concentrations at the closest air quality monitoring station may be below state and federal standards.

Determining Significance of CO Impacts.

- **Preliminary Screening.** Due to the fact that increased CO concentrations are usually associated with roadways that are congested and with heavy traffic volume, the District has established that preliminary screening can be used to determine with fair certainty that the effect a project has on any given intersection would not cause a potential CO hotspot. Therefore, the District has established that if neither of the following criteria are met at all intersections affected by the developmental project, the project can be said to have no potential to create a violation of the CO standard:
 - A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to LOS E or F; or
 - A traffic study indicates that the project will substantially worsen an already existing LOS F on one or more streets or at more or more intersections in the project vicinity.

If either of the above criteria can be associated with any intersection affected by the project, the applicant/consultant would need to conduct a CO Protocol Analysis to determine significance.

- **CO Protocol Analysis.** Even if the two above criteria are met, the project’s influence on any given intersection may still not create a violation of the CO health standard thereby showing a significant effect on the air quality of the area. Prior to conducting a full CO air quality model, the effect of the project can still be determined to be less-than-significant by conducting an analysis using a protocol developed by the Institute of Transportation Studies at University of California, Davis⁶⁰ entitled Transportation Project-Level Carbon Monoxide Protocol. This is a project-level protocol for use by agencies to evaluate the potential local level CO impacts of a project. If the results of this analysis demonstrate no potential for significance, the Lead Agency should include

⁶⁰ Copies of the Protocol can be obtained by calling the Institute of Transportation Studies at UC Davis at (916) 752-6548 or on Caltrans’ Air Quality website at <http://www.dot.ca.gov/hq/env/air/extsoft.htm>

a description of the Protocol Analysis results in a report to the District. If the results demonstrate that the project will potentially have a significant effect on any intersection, the Lead Agency should conduct a CO dispersion modeling study such as CALINE4⁶¹.

- **Using CALINE4.** The SJVAPCD recommends using the CALINE4 dispersion model to estimate local CO concentrations resulting from motor vehicle emissions. CALINE4 was developed by Caltrans and is available from Caltrans and the SJVAPCD regional offices.

The estimated CO concentrations from CALINE4 runs should be compared to state and federal CO standards to determine whether the project would have a significant air quality impact. If the results indicate CO concentrations below the standards, then no further CO analysis is required. If the results predict concentrations above the standards, the Lead Agency should make a finding of a significant impact unless mitigation measures can be implemented that reduce concentrations to meet the standards. The effectiveness of any proposed mitigation measure(s) should be quantified by estimating the effects of the measure(s) on traffic volumes and/or speeds, and then remodeling CO concentrations with CALINE4.

The Lead Agency or consultant should check with Caltrans and the local Regional Transportation Planning Agency⁶² to determine if CO modeling has already been accomplished for intersections impacted by the project. CO modeling may have been done for a highway expansion or plan amendment that includes the project.

5.7 EVALUATING ODOR IMPACTS

An analysis of potential odor impacts should be conducted for both of the following situations: 1) a potential source of objectionable odors is proposed for a location near existing sensitive receptors, *and* 2) sensitive receptors are proposed to be located near an existing source of objectionable odors. Section 4 of this GAMAQI discusses thresholds of significance for odor impacts.

Basis for Evaluating Odor Impacts. The occurrence and severity of odor impacts depends on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptor(s). Therefore, to the extent feasible, the analysis of potential odor impacts should be based on SJVAPCD's experience and data regarding similar facilities in similar settings. Lead Agencies should contact the SJVAPCD's Compliance Division for information regarding specific facilities and categories of facilities, and associated odor complaint records. It is also necessary to

⁶¹ Also available on Caltrans' Air Quality website at <http://www.dot.ca.gov/hq/env/air/extsoft.htm>

⁶² A list of local Regional Transportation Agency's addresses and phone numbers are included in the Technical Document.

contact the local county Environmental Health Department to identify odor complaints filed with those agencies.

Criteria for Detailed Odor Analysis. The Lead Agency should prepare a more detailed analysis for any project that would result in an odor source and sensitive receptors being located closer to one another than the distances indicated in Table 4-2. When projects trigger the screening level distances in Table 4-2, the Lead Agency or consultant should contact the SJVAPCD's Compliance Division for information regarding odor complaints. For projects involving a new receptor being located near an existing odor source(s), the SJVAPCD's Compliance Division at the appropriate regional office should be contacted. The Compliance Division will provide information on odor complaints logged for the facility(ies) for the previous three years. Odor complaints should be mapped in relation to the odor source to establish a general boundary of any existing impacts.⁶³ The location of the proposed project should be identified.

For projects involving new receptors locating near an existing odor source where there is currently no nearby development and for new odor sources locating near existing receptors, the analysis should be based on a review of odor complaints for similar facilities.

In assessing potential odor impacts, consideration also should be given to local meteorological conditions, particularly the intensity and direction of prevailing winds. Local meteorological data can be obtained from the Internet at the National Weather Service at Hanford's web site. This can be found at: <http://nimbo.wrh.noaa.gov/hanford/>. As stated in Section 4, prevailing wind does not eliminate the possibility of significant odor impacts in upwind areas. The Lead Agency should evaluate the type of odor source and whether it is particularly objectionable to people.

5.8 EVALUATING IMPACTS OF HAZARDOUS AIR POLLUTANTS

The SJVAPCD limits emissions of and public exposure to hazardous air pollutants (HAPs)⁶⁴ through a number of programs. The potential for HAP emissions from new and modified stationary sources is reviewed by the SJVAPCD's Permit Services Division which implements the SJVAPCD's Risk Management Policy via the SJVAPCD's permitting process for stationary sources. Examples of sources requiring SJVAPCD permits are listed in Figure 1-2. HAP emissions from existing sources are limited by:

- 1) SJVAPCD adoption and enforcement of rules aimed at specific types of sources known to emit high levels of HAPs;

⁶³Due to confidentiality requirements regarding odor complaints, the name of the complainant, date of complaint, and specific address of the complainant will not be provided. Location will be identified only by block.

⁶⁴HAPs are also referred to in some documents and/or sources as HAZs or as Toxic Air Contaminants (TACs).

- 2) implementation of the Air Toxics “Hot Spots” (AB 2588) Program; and
- 3) implementation of the federal Title III Toxics program.

Procedures for Evaluating HAPs. When evaluating potential impacts related to HAPs, Lead Agencies should consider both of the following situations:

- 1) a new or modified source of HAPs is proposed for a location near an existing residential area or other sensitive receptor, and
- 2) a residential development or other sensitive receptor is proposed for a site near an existing source of HAPs.

For the first scenario, a source of HAPs proposed near receptors, the Lead Agency should consult with the SJVAPCD’s CEQA Section for information regarding anticipated HAP emissions, potential health impacts, and control measures. Preparation of the environmental document should be closely coordinated with the SJVAPCD review of the facility’s permit application when timing allows.

For the second scenario, sensitive receptors locating near sources of HAPs, the Lead Agency should consult with the SJVAPCD’s CEQA Section to review information gathered pursuant to the AB 2588 Program⁶⁵. As discussed in Section 4, the District’s policies and regulations for implementing AB 2588 designate facilities as significant when they have a carcinogenic risk in excess of 10 in one million or a non-cancer risk Hazard Index of greater than one (if prescribed so by California’s Office of Environmental Health Hazard Assessment).

The SJVAPCD is prioritizing these facilities based on the quantity and toxicity of the emissions, and their proximity to areas where the public may be exposed. Facilities put in the significant risk category are required to prepare a comprehensive, facility-wide health risk assessment. The Lead Agency should review the comprehensive health risk assessments for facilities subject to AB 2588 on file at the SJVAPCD offices. For facilities that risk assessments have been conducted, these assessments may be used to identify an area around the facility within which individuals would be exposed to cancer or non-cancer risks that would be identified as significant impacts. For facilities for which risk assessments have not been conducted, the SJVAPCD’s Permit Services Section should be consulted to determine whether location of nearby sensitive receptors would alter the status of the facility with respect to AB 2588 (that is, cause the facility to become “high priority” and therefore trigger a risk assessment requirement).

5.9 EVALUATING CUMULATIVE AIR QUALITY IMPACTS

CEQA defines cumulative impacts as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant

⁶⁵ Air Toxics “Hot Spots” Information and Assessment Act of 1987

projects⁶⁶. An adequate cumulative impact analysis considers a project over time and in conjunction with other related past, present, and reasonably foreseeable future projects whose impacts might compound or interrelate with those of the project being assessed. The following describes SJVAPCD recommended procedures for fulfilling these requirements.

Evaluating Cumulative Ozone Impacts. Ozone impacts are the result of the cumulative emissions from numerous sources in the region and transport from outside the region. Ozone is formed in chemical reactions involving ROG, NOx, and sunlight. All but the largest individual sources emit ROG and NOx in amounts too small to have a measurable effect on ambient ozone concentrations by themselves. However, when all sources throughout the region are combined, they result in severe ozone problems. Lead Agencies should use the quantification methods described in Section 4 to determine if ROG or NOx emissions exceed SJVAPCD thresholds.

Evaluating Cumulative PM-10 Impacts. PM-10 has a similar cumulative regional emphasis when particulates are entrained into the atmosphere and build to unhealthful levels over time. PM-10, however, has the potential to cause significant local problems during periods of dry conditions accompanied by high winds, and during periods of heavy earth disturbing activities. PM-10 may have cumulative local impacts, if for example, several unrelated grading or earth moving projects are underway simultaneously at nearby sites. The SJVAPCD does not currently recommend a quantitative analysis of PM-10 emissions. For cumulative analysis, Lead Agencies should examine the potential PM-10 exposure to sensitive receptors near the project site from earth disturbing activities from the current project and any nearby projects that may occur at the same time. If it appears that the level of activity may cause an adverse impact, the Lead Agency should require the enhanced dust control measures listed in Section 6 to reduce the impact to less than significant levels.

Evaluating Cumulative CO Impacts. Cumulative carbon monoxide impacts are accounted for in the CO hotspot analysis described earlier in this section. The CALINE4 model uses background concentrations that include CO contributions from other sources. Traffic levels used in the model should include all reasonably foreseeable projects that will contribute traffic to the intersections and road segments being analyzed.

Evaluating Cumulative Hazardous Air Pollutant (HAP) Impacts. Cumulative analysis for HAPs focuses on local impacts on sensitive receptors. A single source of HAPs may be insignificant, but when combined with emissions from neighboring sources could expose sensitive receptors to significant pollutant levels. Cumulative analysis of HAPs can be accomplished by identifying all sources of these pollutants near the project site and using a dispersion model to determine exposure levels from the combined emissions of all sources. The SJVAPCD recommends a radius of 1 mile for HAP screening. Dispersion modeling, if indicated by initial screening, should include existing sources, the project, and any reasonably foreseeable projects.

⁶⁶ CCR §15355

5.10 SPECIAL ANALYSIS REQUIREMENTS FOR GENERAL PLANS AND LARGE SPECIFIC PLANS

Very large projects present unique challenges for assessing air quality impacts. General plans and large specific plans often cover 20 years or more development. These plans nearly always include a full range of land uses and densities to accommodate all types of new development. Although they identify land uses, typically a number of different uses are permitted by a single designation. The implication of this is that project level modeling is not effective except for the smallest, slowest growing communities. In addition, impacts tend to be regional in scope.

General plan updates and large specific plans nearly always require the Lead Agency to prepare an EIR. Because of the San Joaquin Valley's nonattainment status and the cumulative impacts of growth on air quality, these plans almost always have significant, unavoidable adverse air quality impacts. The analysis described for the Full Analysis Level (FAL) covers most requirements with the following exceptions:

Modeling for Large Projects. Modeling for general plans and large specific plans will vary depending on the size of the community and the scope of the changes proposed in the plans. The SJVAPCD recommends that communities that have a working transportation model use DTIM to estimate ozone precursor emissions. To the extent possible, the modeling assumptions used should be consistent with runs accomplished for demonstrating Transportation Conformity. The ARB mobile emission inventory model MVEI7G can be used in place of DTIM in jurisdictions that do not have access to DTIM. Results of a traffic study, assuming one is prepared, should be used to identify intersections and corridors requiring CO hot spot analysis. Locations predicted by the traffic model to experience high levels of traffic congestion should be modeled using the dispersion model CALINE4. The URBEMIS 7G for Windows program should only be used for minor general plan updates/amendments and small specific plans with a limited number of different uses.

Manual Quantification Methods. Communities without access to a transportation model may estimate increases in motor vehicle related ozone precursor emissions with manual calculations. A per capita emission factor based on average vehicle use and composite vehicle fleet emissions can be multiplied by the projected population increase accommodated by the plan. Similarly, a per capita or per dwelling unit emission factors can be used to quantify area source emissions (i.e., natural gas combustion for heating, and landscape maintenance equipment, etc.). The URBEMIS 7G for Windows area source component may be used for area source emissions. Although most small SJV communities do not experience traffic congestion to the extent that would cause a CO hot spot, CALINE4 may be used if the screening criteria listed in Section 5.5 are triggered.

SECTION 6 – MITIGATING AIR QUALITY IMPACTS

6.1 INTRODUCTION

CEQA requires Lead Agencies to mitigate or avoid significant environmental impacts associated with discretionary projects⁶⁷. Environmental documents for projects that have any significant environmental impacts must identify feasible mitigation measures or alternatives to reduce the impacts below a level of significance. If after the identification of all feasible mitigation measures, a project is still deemed to have significant environmental impacts, the Lead Agency can approve a project, but must adopt a Statement of Overriding Consideration⁶⁸ to explain why further mitigation measures are not feasible and why approval of a project with significant unavoidable impacts is warranted. This section describes what the SJVAPCD considers to be feasible mitigation in light of existing regulations and research. The SJVAPCD recognizes that the final determination of feasibility will fall to the Lead Agency.

Section Organization. This section is organized as follows: First, it describes the feasible measures available for Lead Agencies to mitigate or eliminate air quality impacts. After identifying the measures, guidance is provided for evaluating their effectiveness. The section starts with large-scale, plan level mitigation and then moves to project level mitigation. The project level discussion is organized by the type of impact being mitigated:

- Mitigating Construction Impacts;
- Mitigating Impacts of Motor Vehicle Use Related to Projects;
- Mitigating Impacts from Area Sources;
- Mitigating Impacts from Hazardous Air Pollutants;
- Mitigating Odor Impacts.

Reason for Air Quality Mitigation. In addition to CEQA requirements, mitigation of impacts is needed to achieve federal and state air quality standards. All incremental emission sources, including those associated with land development, must be mitigated to the greatest extent possible in order to achieve and maintain ambient air quality standards.

⁶⁷ PRC §21002.1(b)

⁶⁸ CCR §15093

6.2 SELECTING APPROPRIATE MITIGATION MEASURES

Mitigation Measure Criteria. Air quality mitigation measures must, by definition, go beyond existing regulations. Regulatory programs are in place at the federal, state, and air district level to reduce air pollutant emissions from nearly all sources, yet they are not always sufficient to eliminate all air quality impacts. For example, the ARB motor vehicle program has dramatically reduced average tailpipe emissions from the vehicle fleet. However, motor vehicle emissions will be a major source of SJV pollution problems in the foreseeable future due to growth in the number of vehicles and in miles traveled.

The SJVAPCD advocates the following criteria for selecting appropriate air quality mitigation measures:

Criteria required by CEQA:

- Mitigation shall be enforceable by permit conditions, legally binding agreements, or other measures⁶⁹;
- Mitigation measures shall be capable of being monitored and enforced;

Recommended criteria:

- Mitigation measures should coincide with the level and timing of an impact;
- The agency responsible should have adequate resources to implement the mitigation;
- Mitigation measures should be carried out within a reasonable period. Mitigation measures taking more than five years should contain interim targets;
- Mitigation measure benefits should be quantified when methods acceptable to the SJVAPCD are available.

Selecting mitigation measures appropriate for a particular project can be a complex task. The complexity arises from several factors. CEQA applies to a wide variety of projects. Complete general plan updates covering thousands of acres are discretionary projects and so are parcel maps and even site plans in some jurisdictions. The general plan often only identifies the eventual use of a parcel of land in vague terms. The site plan review may occur too late in the process and affect too small of an area to allow effective mitigation measures to be identified. In addition, differences in conditions at a site greatly influence the effectiveness of mitigation measures. The overall approach recommended by the SJVAPCD is to use policy statements, design standards, and community-wide programs at the general plan/specific plan level, and site specific measures when the site specific uses are proposed.

Table 6-1 lists mitigation strategies by project type. The list illustrates the level of specificity needed at each phase of the development approval process.

⁶⁹ PRC §21081.6

**Table 6-1
Mitigation Measures By Project Type**

Project	Impact	Mitigation
General plan updates, large specific plans, new towns	Regional ozone impact, PM-10 impact, CO hot spots, toxic air emissions, odors	<ul style="list-style-type: none"> • Adopt air quality element/general plan air quality policies/specific plan policies • Adopt Air Quality Mitigation Fee Program⁷⁰ • Fund TCM⁷¹ program: transit, bicycle, pedestrian, traffic flow improvements, transportation system management, rideshare, telecommuting, video-conferencing, etc. • Adopt air quality enhancing design guidelines/standards • Designate pedestrian/transit oriented development areas on general plan/specific plan/ planned development land use maps • Adopt ordinance limiting woodburning appliances/fireplace installations⁷² • Fugitive dust regulation enforcement coordinated with SJVAPCD • Energy efficiency incentive programs • Local alternative fuels programs • Coordinate location of land uses to separate odor generators and sensitive receptors
General plan amendments, small specific plans, and some zone changes	Potential regional ozone impact, cumulative impacts, CO hot spots, toxic air emissions, odors	<ul style="list-style-type: none"> • Apply general plan policies, local ordinances, and programs from above to the project site or adopt similar site specific programs • Restrict residential traditional wood fireplaces, install natural gas fireplaces or inserts • Provide pedestrian/transit oriented project design • Contribute to Air Quality Mitigation Fee Fund • Contribute towards TCM implementation programs • Commit to on-site improvements; bikeways, transit infrastructure, pedestrian enhancements • Provide traffic flow improvements for areas impacted by the project

⁷⁰ The City of Stockton and the City of Turlock have adopted air quality mitigation fee programs

⁷¹ Transportation Control Measures (TCMs) are programs and actions that are established for the purpose of reducing mobile source emission levels, through reducing the activity level of vehicles.

⁷² Ordinances related to residential heating should emphasize elimination of fireplaces in new residences or requiring natural gas heating, rather than wood heating devices. Natural gas fired fireplaces can reduce emissions of PM-10 and CO as much as 99%, when compared to traditional open-hearth wood fireplaces. If wood heating is necessary, EPA certified pellet stoves/inserts are preferred over fireplaces or even conventional wood stoves. An EPA certified pellet stove/insert could reduce emissions of PM-10 and CO as much as 88%, when compared to traditional open-hearth wood fireplaces.

**Table 6-1
Mitigation Measures by Project Type (cont.)**

Project	Impact	Mitigation
Tentative maps, site plans, conditional use permits	Cumulative ozone impacts, CO, toxic air emissions, odors	<ul style="list-style-type: none"> • Apply general plan policies and local ordinances and programs from above to the project site • Pedestrian/Transit oriented site design • Provide on-site improvement: bikeways, transit infrastructure, pedestrian enhancements • Contribute to Air Quality Mitigation Fee Fund • Contribute to TCM implementation • Energy conservation measures above and beyond requirements • Require residences to install natural gas fireplaces or inserts in lieu of traditional open-hearth wood fireplaces⁷³ • Pay for fleet vehicle conversions to alternative fuels

6.3 MITIGATING PLAN LEVEL AIR QUALITY IMPACTS

Agencies preparing new or updated plans for their communities have special responsibilities for mitigating air quality impacts. Large scale plans and policy documents often set the pattern of new development for the next twenty or more years. Land use patterns can be laid out in ways that produce more or less air pollution. Policies can be set in motion that encourage or discourage air quality friendly development. The SJVAPCD encourages local agencies to view their general plans, community plans, and specific plans as opportunities to improve the Valley's air quality.

Policy as Air Quality Mitigation. The SJVAPCD's *Air Quality Guidelines for General Plans (AQGGP)* sets forth goals, policies, and implementation strategies for use in land use planning documents. The document provides seventy-seven policies that directly and indirectly benefit air quality. Its emphasis is on cities and counties developing a comprehensive approach to air quality that targets new growth areas, redevelopment areas, and programs that reach the entire community. The general plan is the "constitution" for local development, and, as such, provides a framework for deciding the way development will occur.

The SJVAPCD recommends that cities and counties incorporate as many air quality policies from the AQGGP as possible into their general plans, community plans, and specific plans to ensure that development occurs in ways that produce fewer air quality

⁷³ See note, previous page

impacts. To the extent that cities and counties can implement policies that make their communities more transit-, bicycle-, and pedestrian-friendly, and avoid land use conflicts that lead to toxics and nuisance problems, they can minimize the need to mitigate air quality impacts of individual development proposals. The strategies recommended by the AQGGP are summarized as follows:

- A commitment to determine and mitigate project level and cumulative air quality impacts under the California Environmental Quality Act (CEQA);
- A commitment to integrate land use plans, transportation plans, and air quality plans;
- A commitment to plan land uses in ways that support a multi-modal transportation system;
- A commitment to take local action to support programs that reduce congestion and vehicle trips;
- A commitment to plan land uses to minimize exposure to toxic air pollutant emissions from industrial and other sources;
- A commitment to reduce particulate emissions from sources under local jurisdiction;
- A commitment of support for Air District and public utility programs to reduce emissions from energy consumption and area sources (water heaters, woodstoves, fireplaces, barbecues, etc.).

Policy will do nothing to improve air quality unless it is effectively implemented. Policies promoting land use and design measures are most effective if implemented community-wide, or even at the subregional, level. Issues such as allowable land use densities, mixing of land uses, street standards, parking requirements, etc. are most appropriately addressed throughout the entire community or sub-region. Implementing mechanisms such as zoning ordinances, parking standards, and design guidelines, may need to be revised to address these issues. Implementation of these strategies on an individual project basis can still be beneficial, even absent a community-wide strategy, but the benefits will be greater if implemented broadly.

6.4 SJVAPCD SUPPORT FOR LAND USE STRATEGIES

By far the largest air quality impact of plan implementation is related to growth in motor vehicle use. Typically, motor vehicle emissions account for 90 percent or more of total emissions attributable to new commercial and residential projects. This being the case, mitigation measures should emphasize strategies that reduce growth in this emission source. There are four primary ways to reduce motor vehicle emissions:

- 1) Shift travel from single-occupant automobiles to less-polluting or non-polluting modes such as transit, carpools, bicycling, and walking;
- 2) Eliminate the need for trips and reduce the distances traveled through the design, mix, and location of land uses and roads;
- 3) Change to vehicles using cleaner burning fuels; and
- 4) Improve traffic flow.⁷⁴

There is increasing recognition that land use pattern and site design are critical to the success of measures implementing the first two strategies.

Why Land Use Strategies Work. Factors important for influencing travel mode selection and trip generation include the location, intensity, configuration, and design of land uses. Land use patterns typical of post-World War II developments have contributed to increased reliance on the automobile and therefore greater pollutant emissions. Characteristics that contribute to automobile dependency include: low residential and commercial densities, segregated land uses, and street and site design guided solely by the needs for automobile access. Traditional neighborhood designs, development patterns, and densities common before World War II have been found to generate fewer vehicle trips and miles traveled. New development patterns referred to as “neo-traditional” designs utilize many of the features of pre-World War II development integrated with current practices and preferences to attain a variety of transportation and other benefits.

Recent studies comparing trip generation and miles traveled in traditional neighborhood developments and current development patterns have shown substantial differences. Cervero’s study⁷⁵ of Bay Area neighborhoods showed an overall 10 percent higher share of non-work trips by foot, bicycle, or transit in a mixed-use, pedestrian-oriented neighborhood when compared with a low density suburban neighborhood. Some of the factors thought to be responsible for this difference are described below.

- Residential and commercial developments must be of sufficient density to support transit service.
- Neighborhoods must be sufficiently “compact” to encourage walking and biking for errands, socializing, etc.

⁷⁴ Measures that improve traffic flow usually reduce local carbon monoxide levels and reactive organic gases; however, oxides of nitrogen emissions can increase with the greater vehicle speeds and traffic volume allowed by the flow improvement.

⁷⁵ Cervero, Robert and Radisch, Carolyn, *Travel Choices in Pedestrian Versus Automobile Oriented Neighborhoods*, Working Paper 644, Institute of Urban and Regional Development, University of California, Berkeley, July 1995.

- Houses, jobs, and services should be located close enough together to allow walking and biking for at least some trips.
- The circulation network and the design of individual streets should provide a safe and attractive environment for bicyclists and pedestrians.
- The designs of individual development projects should provide direct, safe, and attractive pedestrian access to transit stops and nearby development.
- The community should have a rough balance between the number of jobs and the number of employed residents.

Benefits of Incremental Improvements. Solutions do not necessarily have to occur on a grand scale. Incremental improvements can be made by actions as simple as including a neighborhood commercial center within a residential development, locating a child care center near a transit station, placing parking behind a commercial building, or providing sidewalks and benches in new subdivisions or commercial development. The SJVAPCD strongly encourages Lead Agencies and project proponents to take advantage of every opportunity to make development projects more pedestrian-, bicycle-, and transit-friendly.

Air Quality Design Guidelines. The SJVAPCD encourages cities and counties to adopt air quality friendly design guidelines as part of a general plan implementation strategy. Most current design practices can be improved upon. The SJVAPCD recommends the following websites to get ideas and concepts on what constitutes land use and design strategies that would be beneficial for air quality:

- The Center of Excellence for Sustainable Development (<http://www.sustainable.doe.gov/>)
- The Local Government Commission's Center for Livable Communities (<http://www.lgc.org/clc/welcome.html>)
- Walkable Communities, Inc. (<http://www.walkable.org/>)
- PLANetizen (<http://216.103.50.149/planetizen/>)

Design guidelines can be voluntary suggestions for developers or they can be standards adopted by ordinance that must be followed. The choice is up to the local jurisdiction. Numerous examples of design guidelines with air quality benefits are also available from California communities including Sacramento, San Diego, Modesto, and Merced. Contact the regional SJVAPCD CEQA representative for more information on design guidelines.

Other Benefits of Land Use Strategies. Improved coordination of land use and transportation planning and greater emphasis on making communities more transit-, bicycle- and pedestrian-friendly can reduce reliance on the automobile for all kinds of trips: trips to work, shopping, school, recreation, and personal business. Such strategies can result in many other benefits to the community as well, such as reduced traffic congestion,

energy conservation, preservation of open space, improved water quality (fewer contaminants in urban run-off), and more attractive, cohesive communities.

Transportation-Related Land Use Strategies. A study released by the ARB in June 1995 may be especially useful to Lead Agencies considering land use strategies to reduce air pollutant emissions. The report, prepared by JHK & Associates, is titled *Transportation-Related Land Use Strategies to Minimize Motor Vehicle Emissions: An Indirect Source Research Study*. Following are a number of land use strategies that the report explains can reduce motor vehicle use and emissions:

- Provide pedestrian facilities;
- Increase density near transit corridors;
- Increase density near transit stations;
- Encourage mixed-use development;
- Encourage infill and densification;
- Develop concentrated activity centers;
- Strengthen downtowns;
- Develop interconnected street network; and
- Provide strategic parking facilities.

The report provides estimates of the measures' effectiveness in reducing vehicle use and emissions in various types of communities (urban, suburban, and exurban). The estimated ranges of effectiveness are based on data from California communities. It is hoped that by identifying ranges of effectiveness for the land use measures, local officials will be able to set performance goals (e.g., vehicle trips or emissions per household) for their communities. The report recommends combinations of strategies to achieve the performance goals, and provides guidance on implementation mechanisms. One of the study's findings is that although it is difficult to quantify reductions in vehicle use and emissions from individual strategies applied at specific sites, combinations of strategies implemented community-wide can achieve significant reductions in vehicle use and emissions. The report is available from ARB's Transportation Strategies Group.

Reducing Land Use Conflicts. Land use considerations also can reduce air quality problems not related to motor vehicle use. By separating residential areas and other sensitive receptors from sources of odors, dust, and toxic air contaminants, health and nuisance impacts can be minimized. Buffer zones should always be provided between sensitive receptors and sources of odors, dust, and toxics.

6.4.1 Quantifying Plan Level Mitigation

Quantifying plan level mitigation measures is difficult, but possible. The most effective method to calculate mobile source reductions would be to use a mode split traffic model to show the difference in trips, vehicle miles traveled and emissions based on projected

increases in carpooling, transit, bicycling, and walking. Other regional traffic models without mode-split capability could be used by applying a straight trip or vehicle miles traveled (VMT) reduction percentage estimate to the modeling results. The emissions calculations for the different scenarios can be done with Caltrans' DTIM or ARB's MVEI7G.

The potential change in mode split, trips, and VMT is dependent on a number of factors. The extent of new development in transit and pedestrian oriented patterns, and the timing of buildout of the land uses and transportation system, are critical factors. As a community is built in these new patterns over time, a greater share of the population will be capable of using alternatives to the automobile. However, transportation infrastructure such as light rail will only become feasible when population and jobs-density at both ends of the line are high enough to produce reasonable ridership. So, in the early years, transit mode share would likely remain low, and in later years when the rail system comes on line, transit share would improve rapidly. On the other hand, pedestrian and bicycle trips are often shorter neighborhood trips. The benefits of pedestrian and bicycle-oriented development would therefore be realized when the neighborhood builds out. Since neighborhood commercial and institutional development that will attract pedestrian and bicycle trips typically follow residential construction, these mode shares will also be low in the early phases of development.

The benefits of community programs to reduce area source emissions from sources such as residential water and space heating, landscape maintenance, and woodburning can be quantified based on population growth projections and estimates of penetration of the programs. Emission factors for the standard equipment and devices and for less polluting alternatives can then be used to calculate emissions under the different scenarios. The URBEMIS 7G for Windows area source component contains many of these emission factors as well as mitigation measures quantified in terms of percent reduction.

The quantification methods for land use strategies and area source measures require the use of judgment in developing assumptions. As with any attempt to predict human behavior, absolute accuracy is not possible. Long term monitoring of program effectiveness is needed to enable course corrections should strategies be found less effective than predicted.

6.5 MITIGATING PROJECT LEVEL IMPACTS

For this discussion, the SJVAPCD considers a "project" to be a development proposal that is generally well defined as to final use and project design. However, there is no definitive line between plan and project. For example, in some cases, a developer will file a general plan amendment, zone change, and subdivision map or site plan simultaneously. In other cases, the general plan amendment is filed first and the other actions are filed later pending approval of the plan amendment. Some specific plans provide a high level of design detail and some land use approvals for individual parcels provide few details of the final use.

This being the case, mitigation measures for each project are best identified on a project by project basis.

This section provides separate discussions on mitigating temporary construction emissions and on indefinite operational emissions. The impacts during these two phases are quite different and so call for different mitigation solutions.

6.5.1 Mitigating Construction Impacts

Although the impacts from construction related air pollutant emissions are temporary in duration, such emissions can still represent a significant air quality impact. In some cases, construction impacts may represent the largest air quality impact associated with a proposed project. Construction activities such as grading, excavation, and travel on unpaved surfaces can generate substantial amounts of dust, and can lead to elevated concentrations of PM-10. Emissions from construction equipment engines also can contribute to elevated concentrations of PM-10 and CO, as well as increased emissions of ozone precursors.

Fugitive Dust Control Measures. Control measures for construction emissions of PM-10 are listed in Tables 6-2 and 6-3. Table 6-2 summarizes the requirements of a series of SJVAPCD rules known collectively as Regulation VIII. The purpose of Regulation VIII is to reduce the amount of PM-10 entrained into the atmosphere as a result of emissions generated from anthropogenic (man-made) fugitive dust sources. Compliance with Regulation VIII does not constitute mitigation because it is already required by law. Table 6-3 contains Enhanced and Additional Control Measures that will provide a greater degree of PM-10 reduction than Regulation VIII. The SJVAPCD will recommend these enhanced and additional measures when project conditions warrant; e.g. potential for impacting sensitive receptors, construction sites of significant size, or any other conditions that may justify additional emission reductions.

As noted previously in Section 4, the SJVAPCD does not require Lead Agencies to provide detailed quantification of construction emissions. Occasionally, some major construction projects such as large scale pipelines, water projects, mining projects, etc., will require quantification. Similarly, Lead Agencies need not quantify emission reductions from construction-related mitigation measures. The SJVAPCD's recommended approach to mitigating construction emissions focuses on a consideration of whether all feasible control measures are being implemented. (See Section 4 for further information.) If a Lead Agency chooses to quantify the effect of construction-related mitigation measures, the Lead Agency should use the construction emissions module in URBEMIS 7G for Windows or emission factors from the EPA's Compilation of Air Pollution Emission Factors (AP-42).

Table 6-2
Regulation VIII Control Measures for Construction Emissions of PM-10

Regulation VIII Control Measures. - The following controls are required to be implemented at all construction sites. (Includes changes effective May 15, 2002)

- . All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
- . All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- . All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- . With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.
- . When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
- . All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. *(The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)*
- . Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
- . Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- . Any site with 150 or more vehicle trips per day shall prevent carryout and trackout.

Table 6-3
Enhanced and Additional Control Measures for Construction Emissions of PM-10

<p>Enhanced Control Measures. - The following measures should be implemented at construction sites when required to mitigate significant PM-10 impacts (note, these measures are to be implemented in addition to Regulation VIII requirements):</p>
<ul style="list-style-type: none"> . Limit traffic speeds on unpaved roads to 15 mph; and . Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.
<p>Additional Control Measures. - The following control measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors, or which for any other reason warrant additional emissions reductions:</p>
<ul style="list-style-type: none"> . Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site; . Install wind breaks at windward side(s) of construction areas; . Suspend excavation and grading activity when winds exceed 20 mph; and* . Limit area subject to excavation, grading, and other construction activity at any one time. <p>* Regardless of windspeed, an owner/operator must comply with Regulation VIII's 20 percent opacity limitation.</p>

Mitigating Emissions from Construction Equipment. The discussion of construction impacts and mitigation measures in these Guidelines focuses primarily on PM-10 emissions from fugitive dust sources. However, Lead Agencies seeking to reduce emissions from construction equipment exhaust should also consider the mitigation measures in Table 6-4. The SJVAPCD recognizes that these measures are difficult to implement due to poor availability of alternative fueled equipment and the challenge of monitoring these activities. New control devices are expected to soon be available that can substantially reduce PM and NOx emissions from diesel engines. Manufacturers are developing PM oxidation catalysts and NOx adsorbers that will be sold as retrofit kits and as original equipment. This new technology requires the use of ultra low-sulfur diesel (15 ppm) to be effective.

**Table 6-4
Construction Equipment Mitigation Measures**

Emission Source	Mitigation Measure
Heavy duty equipment (scrapers, graders, trenchers, earth movers, etc.)	<ul style="list-style-type: none"> • Use of alternative fueled or catalyst equipped diesel construction equipment • Minimize idling time (e.g., 10 minute maximum) • Limit the hours of operation of heavy duty equipment and/or the amount of equipment in use • Replace fossil-fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set) • Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak-hour of vehicular traffic on adjacent roadways • Implement activity management (e.g. rescheduling activities to reduce short-term impacts)

6.5.2 Mitigating Impacts from Project Operation

Air quality impacts from project operations are caused by motor vehicle use related to the project, and by combustion of fuels for space heating, cooking, and landscape maintenance. In the case of industrial projects, the impacts are caused by all of the above sources and by the operation of polluting equipment, devices, and processes used in manufacturing. Mitigation measures identified by the SJVAPCD to reduce operational air quality impacts are listed and discussed below.

Mitigating Impacts from Motor Vehicles. Several general approaches can be taken to reduce emissions from motor vehicles:

- Reduce vehicle trips. These measures reduce air pollutant emissions by entirely eliminating some of the vehicle trips associated with a project. An example is the provision of bicycle facilities to encourage bicycle use instead of driving.
- Reduce vehicle miles traveled. These measures reduce emissions by reducing the length of vehicle trips associated with a project. An example is satellite offices/telecommuting centers provided to reduce the length of employee commute trips.
- Use of low emission vehicles. These measures do not aim to reduce trips or VMT, but rather promote the use of fuels that are less polluting than gasoline or diesel. Examples

are the conversion of a vehicle fleet to operate on compressed natural gas and the purchase of an electric vehicle.

- Improve traffic flows/reduce congestion. These measures reduce emissions by reducing traffic congestion and/or reducing stops and starts. This allows vehicles to operate at steady and moderate speeds, and thus lowers pollution per mile traveled. An example is timing the traffic signals on an arterial to facilitate uninterrupted travel.
- Support measures. These measures may not directly reduce emissions, but rather support and facilitate other emission reduction strategies. An example is a guaranteed ride home program implemented at a worksite in order to encourage employees to use commute alternatives by allaying concerns over being without a vehicle in case of emergency.

The SJVAPCD recommends that Lead Agencies use each of the above categories of measures where appropriate. However, caution should be used when selecting some types of measures. In general, measures that reduce vehicle trips entirely achieve the greatest emission reductions. This is because vehicle emissions are highest during the first several miles of a trip. Measures to reduce VMT are most effective when the trips reduced are long so that the cold start emissions are less important. PM-10 emissions receive the most benefit by reducing VMT. This is because PM-10 emissions (due to entrained road dust) are more directly correlated to VMT. Traffic flow improvements may be beneficial to CO and ROG levels if congestion is a major factor, but may cause NOx to increase with speed and greater volume of traffic.

Tables 6-5 and 6-6 list mitigation measures to reduce motor vehicle use. The measures listed are also found in the URBEMIS 7G for Windows Mobile Source Mitigation Component. The measures in Tables 6-5 (a) through (d) present infrastructure-based mitigation measures and are organized by the transportation mode that the measure is intended to support. Tables 6-6 (a) through (f) provide operational measures that are usually implemented by employers.

**Table 6-5 (a)
Transit Infrastructure-Based Mitigation Measures**

Mitigation Measures ⁷⁶	Supporting Factors to Enhance Effectiveness
Provide transit enhancing infrastructure that includes: transit shelters, benches, etc.; street lighting; route signs and displays; and/or bus turnouts/bulbs	<ul style="list-style-type: none"> • Type of transit service (heavy rail, light rail, bus) - rail attracts more riders • Distance from home to transit station and transit station to work - ridership 2-4 times higher within ½ mile • Density of land use - higher densities provide greater ridership • Mix of uses at either end of transit trip - mixed use increases transit use • Pedestrian accessibility to transit system

**Table 6-5 (b)
VMT Infrastructure-Based Mitigation Measures**

Mitigation Measures	Supporting Factors to Enhance Effectiveness
Provide park and ride lots and/or satellite telecommuting centers	<ul style="list-style-type: none"> • Distance to employment centers - long commute attracts park and ride users and telecommuters • Degree of congestion on routes to employment centers • Availability of high occupant vehicle (HOV) lanes, express transit, rail, rideshare incentives • Type of employers - information based jobs have higher telecommuting potential

⁷⁶ All employer-based measures must be implemented voluntarily. SB 437 (Lewis) prohibits local agencies from requiring employer-based trip reduction programs. However, if an applicant elects to undertake these measures to reduce air quality and traffic impacts, credit should still apply to the project.

**Table 6-5 (c)
Pedestrian Infrastructure-Based Mitigation Measures**

Mitigation Measures	Supporting Factors to Enhance Effectiveness
Provide pedestrian enhancing infrastructure that includes: sidewalks and pedestrian paths; direct pedestrian connections; street trees to shade sidewalks; pedestrian safety designs/ infrastructure; street furniture and artwork; street lighting; and/or pedestrian signalization and signage	<ul style="list-style-type: none"> . Degree of sidewalk/path coverage within walking distance . Mixture of uses to attract pedestrians within walking distance . Pedestrian circulation provides direct access (streets interconnected/pedestrian shortcuts) . Degree of street tree coverage along most used routes . Street system designed to enhance pedestrian safety (traffic calming, signalization, separation from traffic, limited curb cuts⁷⁷, etc.) . Pedestrian routes provide safety from crime (eyes on the street, high activity levels, lack of gangs) . Walking routes to important destinations provide visual interest for pedestrians

⁷⁷ Curb cuts are ramps or driveways that cross sidewalks to get vehicles from main roadway to parking area. May be of concern due to the potential to conflict with pedestrian or bicycle traffic.

Table 6-5 (d)
Bicycle Infrastructure-Based Mitigation Measures

Mitigation Measures	Supporting Factors to Enhance Effectiveness
Provide bicycle enhancing infrastructure that includes: bikeways/ paths connecting to a bikeway system; secure bicycle parking; and/or employee lockers and showers	<ul style="list-style-type: none"> • Degree area within bicycling distance (5 miles max.) is served by interconnected bikeways • Degree area within bicycling distance has wide paved shoulders and limited curb cuts⁷⁸ • Speed limits on routes to frequent destinations - low speed limits enhance cycling • Presence of college or university within cycling distance • Mixture of uses that attract bicyclists within cycling distance • Availability of bicycle parking within cycling distance - communities with bike parking ordinance tend to have high availability

Table 6-6 (a)
Rideshare Operational Mitigation Measures

Mitigation Measures	Supporting Factors to Enhance Effectiveness
Implement carpool/ vanpool program e.g., carpool ridematching for employees, assistance with vanpool formation, provision of vanpool vehicles, etc.	<ul style="list-style-type: none"> • Employer provides support measures such as carpool/vanpool subsidies, preferential parking, guaranteed ride home program, etc. • Coordinate with regional ridesharing organizations, e.g., Commute Connection, Central Valley Ridesharing, Kern Rideshare⁷⁹ • Multiple smaller worksites coordinate programs • Limited parking supply and/or implementation of parking fees or parking cash-out

⁷⁸ See note previous page

⁷⁹ Contact your local CEQA representative for identification and contact information of appropriate regional ridesharing organization

Table 6-6 (b)
Services Operational Mitigation Measures

Mitigation Measures	Supporting Factors to Enhance Effectiveness
Provide on-site shops and services for employees, such as cafeteria, bank/ATM, dry cleaners, convenience market, etc.	<ul style="list-style-type: none"> • Sufficient number of employees at worksite, or cooperation among multiple worksites • Safe, direct pedestrian access between employment and retail areas • Jurisdiction provides density bonuses, other incentives to encourage mixed land uses
Provide on-site child care, or contribute to off-site child care within walking distance	<ul style="list-style-type: none"> • Sufficient number of employees at worksite, or cooperation among multiple worksites

**Table 6-6 (c)
Shuttle Operational Mitigation Measures**

Mitigation Measures	Supporting Factors to Enhance Effectiveness
Establish mid-day shuttle service from worksite to food service establishments/commercial areas	<ul style="list-style-type: none"> • Sufficient number of employees at worksite, or cooperation among multiple worksites • Commercial area located within 3 miles • Frequent, scheduled service during lunch hours • Coordination among multiple employers, e.g., at business parks • Provide commute shuttle to transit station, use same vehicle for mid-day shuttle
Provide shuttle service to transit stations/multimodal centers	<ul style="list-style-type: none"> • Major transit facility/multimodal center located within 3 miles of project • Transit use incentives for employees, e.g., on-site distribution of passes, subsidized transit passes, etc. • Frequent, scheduled service during peak commute periods • Coordination among multiple employers, e.g., at business parks • Free or subsidized service • Provide mid-day shuttle to commercial areas, use same vehicle for commute shuttle

Table 6-6 (d)
Parking Operational Mitigation Measures

Mitigation Measures	Supporting Factors to Enhance Effectiveness
Provide preferential parking (e.g., near building entrance, sheltered area, etc.) for carpool and vanpool vehicles	<ul style="list-style-type: none"> • Most effective if parking supply is limited and/or located far from building entrance
Implement parking fees for single occupancy vehicle commuters	<ul style="list-style-type: none"> • Reduced or waived fees for carpools and vanpools • Complemented by transit, ridesharing programs, other commute alternatives • Revenues used to support commute alternatives • Provisions in place to avoid off-site parking spillover
Implement parking cash-out program for employees (i.e., non-driving employees receive transportation allowance equivalent to value of subsidized parking)	<ul style="list-style-type: none"> • Complemented by transit, ridesharing programs, other commute alternatives • Implement at worksites not subject to state parking cash-out requirements • Tax benefits if travel allowance offered as transit/ridesharing subsidy • Provisions in place to avoid off-site parking spillover

Table 6-6 (e)
Transit Operational Mitigation Measures

Mitigation Measures	Supporting Factors to Enhance Effectiveness
Provide transit incentives	<ul style="list-style-type: none"> • Transit use incentives for employees, e.g., on-site distribution of passes, subsidized transit passes, etc. • Transit route maps and schedules posted at worksite • Design and locate buildings to facilitate transit access, e.g., locate building entrances near transit stops, eliminate building setbacks, etc.

**Table 6-6 (f)
Other Operational Mitigation Measures**

Mitigation Measures	Supporting Factors to Enhance Effectiveness
Implement compressed work week schedule (e.g., 4/40, 9/80)	<ul style="list-style-type: none"> • Consult with employees prior to program implementation
Implement home-based telecommuting program	<ul style="list-style-type: none"> • Participation increased if employer provides/assists with provision of equipment (modem, computer, etc.) • Especially effective if employee commute trips are long

6.5.3 Quantifying Mitigation Measures for Project Operations

The effectiveness of proposed mitigation measures should be quantified when feasible. Because the measures’ effectiveness will depend greatly on the specific characteristics of the project and its setting, this quantification should be based on a project-specific analysis. The SJVAPCD recommends using the URBEMIS 7G for Windows mitigation component to estimate trip and vehicle miles traveled (VMT) reductions for most projects. However, if a traffic model containing mode split analysis capability is used to calculate trip generation for use in URBEMIS 7G for Windows, the mitigation quantification component should not be used. The URBEMIS 7G for Windows mitigation component would double count part of the trip reduction estimates already credited to other transportation modes in the mode split model. This may also occur if trip generation numbers used in URBEMIS 7G for Windows are derived from a local traffic study. In this case, the trip generation numbers may already reflect the benefit of measures and infrastructure in place in the community.

When a mode split model or local traffic study is used, estimates of mitigation measure effectiveness will require closer analysis. Guidance on performing this analysis and several cautionary notes regarding estimating the effectiveness of mitigation measures are provided below:

- ⇒ **Clearly explain the assumptions underlying the environmental document’s analysis of mitigation measures’ effectiveness.** The analysis should specifically describe the mitigation measure, identify the source(s) of air pollutants that are expected to be affected by the measure, clearly explain how and to what extent the measure will affect the source(s), and identify the basis for the estimate (empirical observations, computer modeling, case studies, etc.). Critical assumptions should be linked to the mitigation monitoring and reporting program. For example, if the environmental analysis for a commercial development assumes that 20% of employees will carpool to work, then such an objective should be included in the

mitigation monitoring and reporting program as a test of whether the measure is being implemented.

- ⇒ **Be specific regarding implementation of mitigation measures.** The environmental document should describe each mitigation measure in detail, identify who is responsible for implementing the measure, and clearly explain how and when the measure will be implemented. Methods for assessing the measure's effectiveness once it is in place, and possible triggers for additional mitigation if necessary, are also desirable. This level of detail regarding mitigation measure implementation frequently is not addressed until the preparation of the mitigation monitoring and reporting program, which often takes place very late in the environmental review process. In order to reliably assess the effectiveness and feasibility of mitigation measures, however, the SJVAPCD determines that it necessary to consider the specifics of mitigation measure implementation as early in the environmental review process as possible.
- ⇒ **Avoid double counting the effect of proposed mitigation measures.** The project description and assumptions underlying the analysis of project impacts should be carefully considered when estimating the effect of mitigation measures. If certain conditions or behavior are assumed in the impact analysis, then credit may not be claimed when proposing mitigation measures. For example, if the traffic and air quality analyses for a proposed project assume that a certain percentage of people will access the project by transit or bicycle, then any credit claimed for transit- or bicycle-related mitigation must clearly demonstrate effectiveness above and beyond the mode split assumed in the impact analysis.

In some cases, it simply may not be possible to quantify the effect of proposed mitigation measures. It may be that the specific conditions surrounding a particular project are so unique as to render extrapolation from other examples unreliable. A proposed measure may be innovative, with little precedent. The combined effects of a package of measures may be too difficult to quantify. While a certain degree of professional judgment is usually involved in estimating the effectiveness of mitigation measures, excessively speculative estimates should be avoided. If the Lead Agency cannot quantify mitigation effectiveness with a reasonable degree of certainty, the environmental document should at least address effectiveness qualitatively. If the Lead Agency makes a finding that non-quantified mitigation measures reduce an impact to a level of insignificance, the document should provide a detailed justification of that conclusion.

Using URBEMIS 7G for Windows to Quantify Emission Reductions. URBEMIS is a computer program that can be used to estimate emissions associated with land use development projects in California, such as residential neighborhoods, shopping centers, office buildings, etc. URBEMIS stands for "Urban Emissions Model". The newest version (URBEMIS 7G for Windows) contains a component that will quantify emissions reductions achieved when projects include mitigation measures. A brief overview of the

mitigation component is provided below. For complete instructions, see the URBEMIS 7G for Windows User's Guide⁸⁰.

The URBEMIS 7G for Windows mitigation component allows the program user to select mitigation measures from three sub-components. These are construction measures, area source measures, and mobile source measures. The user selects measures appropriate for the project and the model automatically compiles a percent reduction for each pollutant. The reduction efficiencies can be modified for the construction and area source components, but the report generated will indicate that non-default values were used. The SJVAPCD requires the user to provide justification when reduction efficiencies are changed.

URBEMIS Mobile Source Mitigation Component. The mobile source component is the most complex of the three sub-components. The program requires the user to select environmental conditions of the area surrounding the project to determine the effectiveness of the measures and to give credit for conditions surrounding the project site. Credit is provided for conditions in the surrounding environment that are beyond control of the project proponent (i.e. transit service, regional bikeways, complimentary uses within walking distance) that will have the effect of reducing trips or miles traveled by residents or users of the project.

The mobile source mitigation component should only be used with default trip generation rates. The reduction percentages are based on a comparison with average trip generation rates from the ITE Trip Generation Manual. If other trip generation rates are used that account for alternative modes and trip reduction programs, the program will double credit the reduction percentages.

Area Source Component. The area source component will allow the user to generate estimates of area source emissions using default assumptions programmed into the model. Users with detailed information regarding area sources for a given project will be able to modify the default values to more accurately predict expected emissions. Whether using default assumptions or project specific data, URBEMIS 7G for Windows will generate a report listing all of the assumptions used to estimate area source emissions.

Area source mitigation measures are listed in Table 6-7.

Optional Construction Emissions Component. The construction emissions component allows the user to generate estimates of PM-10, ROG, NOx, and CO that occur as a result of demolition, grading, and building construction.

⁸⁰ Available from ARB's website at <http://www.arb.ca.gov/urbemis7/urbemis7.htm>

**Table 6-7
Area Source Mitigation Measures**

Emission Source	Mitigation
Residential Water Heaters	<ul style="list-style-type: none"> . Use solar or low-emission water heaters (beyond Rule 4902) . Use central water heaters
Residential Energy Efficiency	<ul style="list-style-type: none"> . Orient buildings to take advantage of solar heating and natural cooling and use passive solar designs . Increase wall and attic insulation beyond Title 24 requirements
Commercial Water Heaters	<ul style="list-style-type: none"> . Use solar or low-emission water heaters . Use central water heating systems
Commercial Energy Efficiency	<ul style="list-style-type: none"> . Orient buildings to take advantage of solar heating and natural cooling and use passive solar designs . Increase wall and attic insulation beyond Title 24 requirements
Industrial Heating	<ul style="list-style-type: none"> . Orient buildings to take advantage of solar heating and natural cooling and use passive solar designs
Landscape Maintenance	<ul style="list-style-type: none"> . Provide electric maintenance equipment
Residential Heating	<ul style="list-style-type: none"> . Eliminate or limit the amount of traditional fireplaces installed (i.e. natural gas fireplaces/inserts or at least EPA certified wood stoves or inserts instead of open hearth fireplaces)

The URBEMIS 7G for Windows user will have the option of “turning off” this component if he/she wishes. If the construction emissions component is not used, then URBEMIS 7G for Windows will print a statement in the report that the “No Construction Emissions” option was selected.

If the construction emissions component is used, then either default or project specific options are available. As with the components described above, URBEMIS 7G for Windows will print out a list of assumptions used.

6.6 MITIGATING IMPACTS FROM HAZARDOUS AIR POLLUTANTS

Specific mitigation measures should be identified and considered for those projects that may release toxic or hazardous air pollutants to the atmosphere in amounts that may be injurious to nearby populations. Such mitigation measures should consider both routine and non-routine toxic air pollutant releases. Mitigation measures may involve handling, storage, and disposal methods that minimize release of the subject substances to the atmosphere. In some cases, air pollution control devices or process operation modifications can be employed. Furthermore, facilities that may release toxic or hazardous substances to the atmosphere should not be located adjacent to sensitive receptors such as residences, schools, day-care centers, extended-care facilities, and hospitals.

Lead Agencies should also be aware that many facilities such as dry cleaners and gasoline stations produce toxic emissions, but under most circumstances, existing controls reduce impacts to less than significant levels. Therefore, it would not be appropriate to automatically reject such facilities just because they are near a sensitive receptor. More detailed analysis to determine the potential risk and feasible control measures may be appropriate in these cases. Facilities and equipment that require permits from the SJVAPCD are screened for risks from toxic emissions and those exceeding thresholds (see Section 4.3.2) are subject to detailed health risk assessments. Projects exceeding de minimus levels are required to install Toxic Best Available Control Technology (T-BACT) to reduce risks to below significance. If a significant impact remains after T-BACT is implemented, the permit may not be issued unless it meets the discretionary approval criteria of the SJVAPCD Risk Management Policy for Permitting New and Modified Sources.

Projects where significant numbers of diesel powered vehicles will be operating such as truck stops, transit centers, and warehousing may create risks from toxic diesel particulate emissions. These facilities and vehicles are not subject to SJVAPCD permit and so may need mitigation measures adopted by the Lead Agency to reduce this impact. Measures such as limiting idling, electrifying truck stops to power truck auxiliary equipment, use of diesel particulate filters, and use of alternative fuel heavy-duty trucks have been required by some jurisdictions.

6.7 MITIGATING ODOR IMPACTS

Appendix G (Environmental Checklist Form) of the state CEQA Guidelines specifies that the Lead Agency determines whether a project would “create or objectionable odors affecting a substantial number of people.”

Projects that have a significant odor impact because they place sources of odors and members of the public near each other should establish a buffer zone to reduce odor impacts to a less than significant level. The dimensions of the buffer zone must ensure that the encroaching project does not expose the public to nuisance levels of odorous emissions.

In establishing the appropriate dimensions of the buffer zone, the Lead Agency should consider actions currently being taken at the facility to control odors, as well as any future actions to which the facility is firmly committed. A safety margin also should be considered in establishing a buffer zone to allow for future expansion of operations at the source of the odors.

In order to reduce the dimensions of the buffer zone, add-on control devices (e.g. filters or incinerators) and/or process modifications implemented at the source of the odors may be feasible, depending on the specific nature of the facility. Lead Agencies should consult the SJVAPCD's Compliance Division for further information regarding add-on controls and process modifications to control odors. Odor mitigation measures that are targeted at the *receptors* (e.g. residential areas) that rely on sealing buildings, filtering air, or disclosure statements are not appropriate mitigation measures to be used in place of buffer zones or technical controls.

6.8 MITIGATION MONITORING AND REPORTING

CEQA requires that when a public agency makes findings that changes or alterations have been incorporated into the project which mitigate or avoid the significant effects identified in an EIR, or an MND, the agency must also adopt a program for reporting and monitoring mitigation measures that were adopted or made conditions of project approval⁸¹. This requirement is intended to assure that mitigation measures included in a certified EIR or MND are indeed implemented. Monitoring for the measures recommended in this document is best accomplished by the agency with land use approval. A Mitigation Monitoring and Reporting Program should include the following components:

- a description of each mitigation measure adopted by the Lead Agency;
- the party responsible for implementing each mitigation measure;
- a schedule for the implementation of each mitigation measure;
- the agency or entity responsible for monitoring mitigation measure implementation;
- criteria for assessing whether each measure has been implemented;
- enforcement mechanism(s).

Most of the mitigation measures described in this section are implemented during project construction. Monitoring of these measures is typically accomplished as conditions of approval of the subdivision map or site plan. On site measures, such as street trees and high efficiency heating and cooling systems are verified during building inspection prior to

⁸¹ PRC §21081.6

occupancy. Off-site measures or contributions to city/county operated air quality mitigation fee programs may require the applicant to prove completion prior to issuing building permits.

APPENDIX A – GLOSSARY AND ACRONYMS

Air Basin - An area of the state designated by the ARB pursuant to Subdivision (a) of Section 39606 of the CH&SC.

Air Monitoring - The periodic or continuous sampling and analysis of air pollutants in ambient air or from individual pollutant sources.

Air Pollutants - Substances that are foreign to the atmosphere or are present in the natural atmosphere to the extent that they may result in adverse effects on humans, animals, vegetation, and/or materials.

Air Pollution Control Officer (APCO) - The executive officer of the District appointed by the Governing Board. The APCO is the approving authority for permits issued by the District, and therefore is the decision-making body for CEQA purposes for these approvals.

Alternative Fuels - Fuels such as methanol, ethanol, natural gas, and liquid petroleum gas that are cleaner burning and contribute to the attainment of ARB's emission standards.

Ambient Air - Air occurring at a particular time and place outside of structures. Often used interchangeably with outdoor air.

Anthropogenic - Relating to or influenced by the impact of man on nature.

APCD (Air Pollution Control District) - A county agency with authority to regulate stationary sources of air pollution (such as refineries, manufacturing facilities, and power plants) within a given county, and governed by a District Air Pollution Control Board composed of the elected county supervisors. (Compare AQMD and Unified District)

AQAP (Air Quality Attainment Plan) - A plan prepared by a APCD/AQMD designated as a nonattainment area, to comply with the California Clean Air Act for purpose of meeting the requirements of the California Ambient Air Quality Standards.

AQMD (Air Quality Management District) - A group of counties or portions of counties with authority to regulate stationary sources of air pollution within the region and governed by a regional air pollution control board comprised mostly of elected officials from within the region. An AQMD is established by state legislation. (Compare APCD and Unified District)

ARB (California Air Resources Board) - California's lead air quality agency consisting of an eleven-member Governor-appointed board fully responsible for motor vehicle pollution control, and having oversight authority over California's air pollution management program.

Area Sources - Also known as "area-wide" sources, these include multiple stationary emission sources such as water heaters, gas furnaces, fireplaces, and wood stoves that are individually small but can be significant when combined in vast numbers. The CCAA requires districts to include these area sources in the AQMPs.

Attainment - Achieving and maintaining the ambient air quality standards (both state and federal) for a given standard.

Attainment Area - An area that is in compliance with the National and/or California Ambient Air Quality Standards.

CAAQS (California Ambient Air Quality Standards) - Specified concentrations and durations of air pollutants, recommended by the California Department of Health Services and adopted into regulation by the Air Resources Board, which relate the intensity and composition of air pollution to undesirable effects. CAAQS are the standard that must be met per the requirements of the California Clean Air Act.

CALINE4 - California LINE Source Dispersion Model, is the standard modeling program used by Caltrans to assess air quality impacts near transportation facilities, in the rare cases when the screening procedures of the CO Protocol fail. It is based on the Gaussian diffusion equation and employs a mixing zone concept to characterize pollutant dispersion over the roadway.

CCAA (California Clean Air Act) - A California law passed in 1988 that provides the basis for air quality planning and regulation independent of federal regulations, and which establishes new authority for attaining and maintaining California's air quality standards by the earliest practicable date. A major element of the Act is the requirement that local APCDs/AQMDs in violation of the CAAQS must prepare attainment plans that identify air quality problems, causes, trends, and actions to be taken for attainment.

CEQA (California Environmental Quality Act) - A state law intended to protect the environment of California. It is codified in Sections 21000 through 21177 of the Public Resources Code. CEQA establishes mandatory ways by which governmental (public agency) decision-makers are informed about the potential significant environmental effects of proposed projects. CEQA also mandates the identification of ways to avoid or significantly reduce damage to the environment. After preliminary review or the completion of an Initial Study, the Lead Agency may decide to prepare an Environmental Impact Report (EIR) for a project. An EIR is an informational document used to inform public agency decision-makers and the public of the significant effects of a project. The EIR also identifies possible ways

to eliminate or minimize the significant effects and describes reasonable alternatives to the project. A recent court decision has determined that both alternatives and mitigation measures must be discussed in the EIR.

CEQA Guidelines - Regulations prepared for the State Secretary for Resources to be followed by all state and local agencies in California in the implementation of CEQA, beginning at Sec. 15000, California Code of Regulations.

CEQA Statutes - California Environmental Quality Act, as amended, beginning at Section 21000 of the Public Resources Code.

CH&SC - California Health and Safety Code. Division 26 of the CH&SC was enacted by legislature in order that the public interest is “safeguarded by an intensive, coordinated state, regional, and local effort to protect and enhance the ambient air quality of the state⁸²”.

CO (Carbon Monoxide) - A colorless, odorless gas resulting from the incomplete combustion of fossil fuels. Over 80% of the CO emitted in urban areas is contributed by motor vehicles. CO interferes with the blood’s ability to carry oxygen to the body’s tissues and results in numerous adverse health effects. CO is a criteria air pollutant.

CO Protocol (Transportation Project-Level Carbon Monoxide Protocol) – A protocol developed by UC Davis in December 1997 that deals with project-level air quality analysis needed for federal conformity determinations, NEPA, and CEQA. The Protocol is the standard method for project-level air quality analysis by Caltrans.

Concentration - The amount of an air pollutant present in a unit sample, usually measured in parts per million (ppm) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

Criteria Air Pollutant - An air pollutant for which acceptable levels of exposure can be determined and for which a federal or state Ambient Air Quality Standard has been set. Examples include: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM-10 (see individual pollutant definitions).

District - The San Joaquin Valley Air Pollution Control District is a unified air pollution control district as defined by the Health and Safety Code Section 40150. The District is comprised of the counties of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and the San Joaquin Valley portion of Kern County. *See also SJVAPCD.*

DTIM - Direct Travel Impact Model - A model developed by Caltrans in the late 1970's and is used in the State of California to calculate amounts of air pollutant emitted from

⁸² CH&SC §39001

motor vehicles and fuel consumption. The DTIM analysis is based on travel data produced by the Regional Transportation Model and on emission factors from the EMFAC Model.

EIR - Environmental Impact Report is a detailed statement prepared under CEQA describing and analyzing the significant effects of a project and discussing ways to mitigate or avoid the effects⁸³.

EIS - Environmental Impact Statement is an environmental impact document prepared pursuant to the National Environmental Policy Act (NEPA). NEPA applies to projects carried out, financed, or approved by federal agencies⁸⁴.

Emissions Inventory - An estimate of the quantity of pollutants emitted into the atmosphere over a specific period such as a day or a year. Considerations that go into the inventory include type and location of sources, the processes involved, and the level of activity.

EMFAC - An ARB program that is the source of emissions factors for most California motor vehicle emissions models.

Emission Standard - the maximum amount of a pollutant that is permitted to be discharged from a polluting source such as an automobile or smoke stack.

EPA (US Environmental Protection Agency) - the federal agency charged with setting policy and guidelines, and carrying out legal mandates for the protection of national interests in environmental resources.

EPA-Certified Wood Stoves – The EPA has promulgated New Source Performance Standards for wood heaters, which establish threshold particulate emission rates for wood heaters to be certified. Since 1992, only certified wood heaters can be sold in the United States. Certified wood stoves must be labeled according to procedures specified by the EPA. Wood stoves, cordwood fireplace inserts, and some pellet stoves/inserts must pass through the EPA certification process. Fireplaces themselves are exempt from EPA certification.

FCAA (Federal Clean Air Act) - Federal law passed in 1970 and amended in 1977 and 1990 that sets primary and secondary National Ambient Air Quality Standards for major air pollutants and thus forms the basis for the national air pollution control effort.

Fireplaces (open hearth) – Fireplaces are used primarily for aesthetic effects and secondarily for supplemental heating. Wood is the most common fuel for fireplaces. Conventional fireplaces are either manufactured metal (referred to as

⁸³ CCR §15362

⁸⁴ CCR §15220

zero-clearance or factory-built fireplaces) or masonry (generally brick and/or stone, assembled on site, and integral to a structure) design. Both have large fixed openings to the fire bed (sometimes called “open-hearth”). Fireplaces usually heat a room by radiation, and are considered inefficient heating devices with a significant fraction of the combustion heat lost in the exhaust gases and through fireplace walls. Inserts can be used to increase the heating potential and decrease emissions (*see Fireplace Inserts*)

Fireplace Inserts – Open-hearth fireplaces have large fixed openings to the fire bed. EPA-certified and pellet wood stoves can be designed as inserts to be installed into existing fireplace firebox/hearth cavities. If properly installed, their performance is similar to their stove counterparts. In addition, gas fireplace inserts can be installed directly into existing fireplaces, reducing the particulate emissions by almost 100%.

High occupant vehicle (HOV) lanes - the operation of reserving one or more lanes on a freeway for exclusive use of only vehicles with more than one occupant. Usually used in areas with heavy congestion to encourage carpooling.

Hydrocarbon - any of a large number of compounds containing various combinations of hydrogen and carbon atoms. They may be emitted into the air as a result of fossil fuel combustion and fuel volatilization, and are a major contributor to smog.

Indirect Source - facilities, buildings, structures, properties, and/or roads which, through their construction to operation indirectly contributes to air pollution. This includes projects and facilities that attract or generate mobile sources activity (autos and trucks) such as shopping centers, employment sites, schools, and housing developments, that result in the emissions of any regulated pollutant.

Mitigated Negative Declaration (MND) - A negative declaration prepared for a project when the initial study has identified potentially significant effects on the environment, but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment [PRC §21064.5].

Mitigation - Measures taken to avoid or reduce a significant effect including:

- 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.
- Compensating for the impact by replacing or providing substitute resources or environments [CCR §15370].

NAAQS (National Ambient Air Quality Standards) - are standards set by the USEPA for the maximum levels of air pollutants that can exist in the ambient air without unacceptable effects on human health or the public welfare.

Natural Gas Fireplaces – Natural gas fireplaces are designed for new construction and can be either decorative gas fireplaces or gas fireplace heaters. Both produce practically no particulate emissions. Gas fireplace heaters are more sophisticated than decorative gas fireplaces, as they are designed for efficiency whereas decorative gas fireplaces are designed more for flame presentation aesthetics. Existing fireplaces can be converted to natural gas also by installing a gas fireplace insert (*see Fireplace Inserts*).

NSR (New Source Review) - the mechanism to assure that new and modified stationary sources will not interfere with the attainment or maintenance of any ambient air quality standard, or prevent reasonable further progress towards the attainment or maintenance of any ambient air quality standard. A program used in a nonattainment area to permit or site new permit or site new industrial facilities or modifications to existing industrial facilities that emit nonattainment criteria air pollutants. The two major requirements of NSR are Best Available Control Technology and Offsets.

Negative Declaration - A written statement briefly describing the reasons that a proposed project will not have a significant effect on the environment and does not require the preparation of an environmental impact report [PRC §21064].

Nonattainment Area - an area identified by the EPA and/or ARB as not meeting either NAAQS or CAAQS standards for a given pollutant.

Ozone - a pungent, pale, blue, reactive toxic gas consisting of three oxygen atoms. It is a product of the photochemical process involving the sun's energy. Ozone exists in the ozone layer as well as at the earth's surface. Ozone at the earth's surface causes numerous adverse health effects and is a criteria air pollutant. It is a major component of smog.

Ozone Precursors - compounds such as hydrocarbons and oxides of nitrogen, occurring either naturally or as a result of human activities, which contribute to the formation of ozone, the principal component of smog.

Pedestrian Oriented Development (POD) - any of a number of design strategies that emphasize pedestrian access over automobile access. They typically provide pedestrian amenities such as sidewalks, street trees, commercial at street frontage, safe street crossings, etc.

Pellet Stoves – Pellet stoves and pellet-stove inserts are fueled with pellets of sawdust, wood products, or other biomass materials pressed into manageable shapes and sizes. These stoves have active air flow systems and unique grate design to accommodate this type of fuel. Other than natural gas fireplaces and inserts, the pellet stove/insert is the most thermally, and emissions, efficient of all residential wood heating apparatus.

PM-10 (Respirable Particulate Matter) - a major air pollutant consisting of solid or liquid matter such as soot, dust, aerosols, fumes and mists less than 10 microns in size (one micron = 1/1,000,000 meter = 0.00003937 inch). PM-10 causes visibility reduction and adverse health effects, and is a criteria air pollutant.

Project - An activity that 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:

- An activity directly undertaken by a public agency.
- An activity undertaken by a person that is supported, in whole or in part, through contracts, grants, subsidies, loans, or other forms of assistance from one or more public agencies.
- An activity that involves the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies [PRC §21065].

ROG (Reactive Organic Gas) - hydrocarbon compounds which are reactive and may contribute to the formation of smog. Also sometimes referred to as non-methane organic compounds and VOCs.

SIP (State Implementation Plan) - a document prepared by each state describing existing air quality conditions and measures that will be taken to attain and maintain National Ambient Air Quality Standards. In California, districts prepare nonattainment area plans to be included in the state's SIP.

Significant Effect on the Environment - A phrase used to indicate that an environmental effect of a project is at a level requiring the detailed analysis of an EIR and that the effect is severe enough to consider disapproving or changing the project to avoid the effect. The terms "significant effect" and "significant impact" are interchangeable under CEQA [CCR §15382].

State CEQA Guidelines - See CEQA Guidelines

Transit Oriented Development (TOD) - mixed use neighborhoods, up to 160 acres in size, which are developed around a transit stop and core commercial area. The entire TOD must be within an average of 2,000-foot walking distance of a transit stop. Secondary areas of lower density housing, schools, parks, and commercial and employment uses surround TODs for up to one mile.

Unified District - two or more contiguous counties may merge their county districts into one unified district. A unified district is formed by action of the member counties. The San Joaquin Valley Air Pollution Control District is a Unified District. (*See also APCD and AQMD*)

URBEMIS 7G for Windows - URBEMIS is a computer program that can be used to estimate emissions associated with land use development projects in California, such as residential neighborhoods, shopping centers, office buildings, etc. URBEMIS stands for "URBan EMISsions Model." URBEMIS 7G for Windows, Version 5.1.0 is the latest version. It is written specifically to run in the Windows 95/98 environment.

Volatile Organic Compounds (VOCs) - any organic compound containing at least one carbon atom except for specific exempt compounds found to be non-photochemically reactive. In this document, VOC is synonymous with ROG.

Wood Stoves – Wood stoves are enclosed wood heaters that control burning or burn time by restricting the amount of air that can be used for combustion. They are commonly used in residences as space heaters. Conventional wood stoves do not have any emission reduction technology or design feature and, in most cases, were manufactured before July 1, 1986. Current sales of wood stoves must be certified to 1990 EPA emission standards and will include either catalytic or noncatalytic emission reduction technology.

Acronyms

- ADT** - average daily trips
AQAP - Air Quality Attainment Plan
AQGGP - Air Quality Guidelines for
General Plans
ARB - Air Resources Board (also
CARB)
CAAQS - California Ambient Air
Quality Standard
CAL - cursory Analysis Level
CCAA - California Clean Air Act
CCR - California Code of Regulations
CEQA - California Environmental
Quality Act
CFC - chlorofluorocarbons
CFR - Code of Federal Regulations
CH&SC – California Health and Safety
Code
CO - carbon monoxide
DAQ - Designs for Air Quality
DTIM - Direct Travel Impact Model
EIR - Environmental Impact Report
EPA - United States Environmental
Protection Agency
FAL - Full Analysis Level
FCAA - Federal Clean Air Act
FCAAA - Federal Clean Air Act
Amendments of 1990
FIP - Federal Implementation Plan
GAMAQI - Guide for Assessing and
Mitigating Air Quality Impacts
HAP - hazardous air pollutant
ISR - indirect source review
ITE - Institution of Transportation
Engineers
LOS - level of service
MEI - Maximally Exposed Individual
MND - Mitigated Negative Declaration
NAAQS - National Ambient Air
Quality Standard
NEPA - National Environmental Policy
Act

NESHAP - National Emission
Standards for Hazardous Air
Pollutants

NOx - oxides of nitrogen

NOP - Notice of Preparation

PM-10 - respirable particulate matter of
10 microns in diameter or less

PRC - Public Resources Code

ROG - reactive organic gases

SJV - San Joaquin Valley

SJVAB - San Joaquin Valley Air Basin

SJVAPCD - San Joaquin Valley Air
Pollution Control District

SOx - oxides of sulfur

SPAL - Small Projects Analysis Level

TCM - transportation control measures

USEPA - United States Environmental
Protection Agency

VMT - vehicle miles traveled

VOC volatile organic compounds (*see
ROG*)

APPENDIX B – SJVAPCD POINT OF CONTACT LIST

Northern Region Office– Modesto 4230 Kiernan Ave., Suite 130 Modesto, CA 95356	(209) 557-6400 FAX (209) 557-6475
Central Region Office – Fresno 1990 E. Gettysburg Avenue Fresno, CA 93726	(559) 230-6000 FAX (559) 230-6061
Southern Region Office – Bakersfield 2700 “M” St., Suite 275 Bakersfield, CA 93301	(661) 326-6900 FAX (661) 326-6975

District website – <http://www.valleyair.org>

PLANNING DIVISION

Air Quality Elements/General Plan	(559) 230-5800
CEQA Commenting/Impact Assessment	
– Northern Region (<i>Merced, Stanislaus, and San Joaquin Counties</i>)	(209) 557-6470
– Central Region (<i>Fresno and Madera Counties</i>)	(559) 230-5800
– Southern Region (<i>Tulare and Kings County and a portion of Kern County</i>)	(661) 326-6980
Public Information/Education	(559) 230-5850

PERMIT SERVICES DIVISION

Small Business Assistance	
– Northern Region (<i>Merced, Stanislaus, and San Joaquin Counties</i>)	(209) 557-6446
– Central Region (<i>Fresno, Kings, and Madera Counties</i>)	(559) 230-5888
– Southern Region (<i>Tulare County and a portion of Kern County</i>)	(661) 326-6969
Air Toxics/Hazardous Air Pollutants	(559) 230-5900

COMPLIANCE DIVISION

Regulation VIII - Fugitive Dust Control	(559) 230-5950
Asbestos Coordinator	
– Northern Region (<i>Merced, Stanislaus, and San Joaquin Counties</i>)	(209) 557-6400
– Central Region (<i>Fresno, Kings, and Madera Counties</i>)	(559) 230-5950
– Southern Region (<i>Tulare County and a portion of Kern County</i>)	(661) 326-6900