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April 11, 2008

RECEIVED APR 15 2008

David Bryant  
Division Manager, Special Projects  
Tulare County Resource Management Agency  
5961 South Mooney Blvd.  
Visalia, CA 93277

Re: Draft Environmental Impact Report for the Tulare County General Plan Update

Dear Mr. Bryant:

On behalf of the Council of Cities, we are writing to express our grave concerns regarding Tulare County's proposed General Plan Update and the accompanying Draft Environmental Impact Report. The Council of Cities is a voluntary organization consisting of the County's eight incorporated cities: Visalia, Tulare, Farmersville, Porterville, Dinuba, Lindsay, Woodlake, and Exeter (collectively, the "Cities"). Through the Council, the Cities have joined together to share expertise and to jointly advocate for responsible planning.

As stated in previous correspondence from the Cities, the Council of Cities supports the County of Tulare in its efforts to update its General Plan. Such an update provides the County with the opportunity to provide direction for future growth so as to maintain the agricultural character and economy of the unincorporated areas and to direct growth to the Cities and selected unincorporated communities that have infrastructure and services to accommodate future development. Unfortunately, the proposed General Plan Update fails to provide such direction, instead offering a proposal that will result in uncontrolled sprawl and haphazard development patterns. As evidenced by the *thirty-one* admitted significant unavoidable impacts that would result from adoption of the General Plan Update, the Plan will create long term environmental damage, affecting residents and future generations throughout the region.

Moreover, our review of the General Plan Update (also called the "Plan" or the "Update") and the Draft Environmental Impact Report (the "DEIR") has revealed significant

legal flaws that will require substantial revision to correct. The primary purpose of this letter is to explain why the Plan and DEIR violate state law.

At the heart of most of the problems with the Update and the DEIR lies the General Plan Update's failure to provide a comprehensive land use program for the County. The Update explicitly refuses to create a comprehensive plan and land use map that would guide growth to chosen locations in the County, and therefore fails to include the elements required for general plans under the California Planning and Zoning Law, Government Code § 65000 *et seq.* That statute requires that a general plan provide clarity regarding land use designations and population densities, and the General Plan Update does not do so.

At the same time, the DEIR's analysis of the environmental impacts of the Plan, crippled by the lack of meaningful land use designations, cannot meet the standards of the California Environmental Quality Act ("CEQA"), Public Resources Code § 21000 *et seq.*, and the CEQA Guidelines, California Code of Regulations, title 14, § 15000 *et seq.* ("CEQA Guidelines"). An EIR's first task is to describe the project under review. This DEIR, however, describes only the expected population growth over the Plan's term, without considering the specific growth patterns brought about under the Plan. It then moves on to analyze the environmental impacts of development under the Plan. These analyses are almost universally superficial: almost none of them quantify the impacts, nor do they discuss the specific locations where impacts might occur. Instead, they offer only very general, and generic, discussions of impacts. There is almost nothing to indicate that these discussions even refer to Tulare County—they could be explaining the types of impacts that development could bring to any county in the state.

Most of these impact analyses conclude that impacts will be significant and that no mitigation is possible. As we point out below, mitigation is frequently right at the County's fingertips, in the form of General Plan Policies that would provide effective mitigation if they were made mandatory instead of merely offered as suggestions. Finally, the DEIR considers alternatives to the proposed Plan, including the City-Centered Alternative, which the Council of Cities believes is likely to be the best route for development in the County. The DEIR, however, fails to recognize the clear environmental superiority of the City-Centered Alternative and dismisses it on the factually incorrect ground that it will provide less reinvestment than other alternatives.

It is important to note that many of the DEIR's failings are closely related to the flaws in the General Plan Update itself: the DEIR cannot describe or analyze the impacts of development under the General Plan when the General Plan does not provide a comprehensive land use plan. Thus, the best course for the County at this point is to undertake a major revision of the General Plan Update, giving it the required comprehensive land use plan. Then the

County will be in a position to prepare an adequate DEIR analyzing the Plan's environmental impacts.

Along with the rest of the southern San Joaquin Valley, Tulare County faces tremendous population growth in the next few decades. With this General Plan Update, the County must choose whether it will harness that growth and make it an engine of prosperity for all of the County's residents, or whether economic forces will hold the reins, forcing local government to play catch-up as it struggles to meet vast new demands on the County's resources. The General Plan Update as it stands now will put the County in a position to get pushed around by growth. The Council of Cities urges the County to reconsider the Update's hands-off approach to growth and to revise the General Plan Update and the EIR accordingly.

#### **I. The General Plan is Inadequate.**

A general plan is an essential aspect of the governance of any county, a "constitution for all future development." *Leshar Communications, Inc. v. City of Walnut Creek* (1990) 52 Cal. 3d 531, 540. It provides a firm spine upon which all of a county's land use decisions depend for direction and leverage. Tulare County is today standing exactly at the point where two lines of force meet head-on. From one direction, the County faces large and rapid population growth—in concrete terms, a huge number of people who will need houses in the next few decades. From the other direction comes the intense pressure to protect some of the most productive farmland in the nation, if not the world. The County has the authority and means to accommodate both of these needs, but it will need a strong backbone.

That is why the profound flaws of the proposed General Plan Update are so disappointing. Rather than putting forth a comprehensive, effective general plan, the County has abdicated responsibility, and instead offers an update that is in effect no plan at all. The proposed General Plan Update explicitly declines to provide guidance for developments and includes no land use plans. It provides instead a vague reference to an inaccessible collection of other diagrams. These efforts are insufficient to meet the challenges facing Tulare County, and they do not meet the mandates of state law. The General Plan Update is legally and practically inadequate.

#### **A. The General Plan's Failure To Provide a Land Use Plan for the County Renders it Invalid.**

The DEIR itself precisely describes the General Plan's failure to follow statutory mandates: "[The General Plan] does not solidly advocate, promote, or represent any one development scenario[] because any attempt to predict the exact pace and locations of future market-driven growth is considered speculative." DEIR at 2-9. This reasoning is not only

illogical, it also highlights the County's failure to follow the requirements of the Planning and Zoning Law, which governs the preparation and contents of general plans.

Under state law, the land use element of a general plan must "designate[] the proposed general distribution and general location and extent of the uses of the land for housing, business, industry, . . . agriculture, . . . and other categories of public and private uses of land." Gov. Code § 65302(a). In other words, a general plan must actually plan for and guide development. By requiring general plans, California has determined that in order to steward the state's resources and protect the quality of life for its citizens, cities and counties must take an active role in determining development patterns. The County's failure to advocate any "development scenario" is not a valid option.

Thus, by refusing to designate where, specifically, future growth will occur or to create specific policies that guide growth to those locations, the General Plan Update completely fails to fulfill the requirements of state law. Instead of making decisions about growth, the General Plan simply provides population projections for the County: 254,109 new residents, with 75% of that population within the Urban Development Boundaries ("UDBs") of the incorporated cities. DEIR at 2-8. This prediction is no substitute for planning. If the County wants development under the General Plan to follow these projections, then it must include land use designations for specific areas and institute policies that will guide growth into that pattern. The proposed General Plan Update, however, does not contain such designations or policies.

**B. The General Plan Does Not Meet the Requirements of Government Code Section 65302.**

The Update, in fact, contains none of the pieces required by the Planning and Zoning Law. As noted above, a valid general plan must "designate[] the proposed general distribution and general location and extent" of land uses. Gov. Code § 65302(a). A plan's depiction of its policies "should be detailed enough to identify possible uses at any particular time." 67 Ops. Cal. Atty. Gen. 75 (Mar. 7, 1984). State law, moreover, requires that a general plan contain "a diagram or diagrams and text setting forth objectives, principles, standards, and plan proposals." Gov. Code § 65302. The proposed General Plan Update fulfills none of these requirements.

While the General Plan lists dozens of land use designations, it does not explain where in the County those designations would apply. It includes no land use map illustrating the location of those designations. Like the Court of Appeal found in *Camp v. Board of Supervisors* (1981) 123 Cal. App. 3d 334, 350, because "[i]t is consequently impossible to relate any . . . 'density standard' of population to any location in the County," the land use element is plainly inadequate.



The DEIR's language, moreover, is not an effective replacement for the absent map or diagram. Looking at the text of the DEIR's "Buildout Under the General Plan" section or the Land Use chapter in the Goals and Policies volume, no property owner, developer or local agency would be able to identify the possible uses of a particular parcel of land at any particular time. Nor will the County, in the future, be able to make consistency determinations that particular development proposals conform to the type and intensity of development allowed for such property under the General Plan.

State law states that "the degree of specificity and level of detail of the discussion of each element shall reflect local conditions and circumstances." Gov. Code § 65301(c). The conditions and circumstances of Tulare County demand a land use element that actually provides guidance for the location of development: during the General Plan's timeframe, the County will see significant additional home construction, according to the EIR. Without specific guidelines or direction on where such development is appropriate, the County can neither plan effectively nor provide adequate services for this expected growth.

The General Plan also lacks the required standards for population density and building intensity. A general plan must contain information regarding the standards for population density and building intensity for the various districts and other territory covered by the plan. Gov. Code § 65302(a); *see also Twain Harte Homeowners Association v. Tuolumne County* (1982) 138 Cal. App. 3d 664, 699. While the General Plan does provide some indication of densities and intensities for each designation, that data does little good in the absence of information about where in the County each designation applies.

Even the description of the designations is missing a key element. As the Governor's Office of Planning and Research notes, "population density can best be expressed as a relationship between two factors: the number of dwellings per acre and the number of residents per dwelling." Governor's Office of Planning and Research, General Plan Guidelines, 2003, p. 50. The General Plan provides no indication of the number of residents allowed or expected per dwelling. It is therefore impossible to turn its dwellings per acre figures into actual population densities.

Finally, Government Code section 56302(b) requires that the General Plan have a circulation element, "correlated with the land use element." The General Plan Update shows no evidence of such correlation. Because the Update does not include information about the locations designated for growth, it is impossible to tell whether the circulation element would effectively serve the expected growth. The General Plan Update thus does not meet the requirements of the Planning and Zoning Law.

**C. The General Plan's Reference to Other Land Use Diagrams Cannot Cure its Legal Inadequacy.**

The County appears to rely upon existing diagrams from community and area plans instead of providing the required comprehensive land use plan. *See* Goals and Policies Report at 5-3. This approach cannot make the General Plan adequate for at least two reasons. First, if a given element of a general plan relies upon material beyond the plan itself, it must provide "a clear reference to the outside documents." *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal. App. 3d 692, 744. The Update's general reference to "Land Use Diagrams for community plan areas, the Kings River Plan, mountain sub-areas, and city General Plan areas" does not meet this standard.

Moreover, the purpose of this requirement is to provide the public with a General Plan that it can understand and use. "A general plan which does not set forth the required elements in an understandable manner cannot be deemed to be in substantial compliance" with the Planning and Zoning Law. *Kings County*, 221 Cal. App. 3d at 744. A general plan must "state with reasonable clarity what its plan is." *Concerned Citizens of Calaveras County v. Board of Supervisor* (1985) 166 Cal. App. 3d 90, 97. Neither the information in the General Plan Update itself, nor its references to other plans, provide the required clarity. Although Part II of the Goals and Policies Report discusses several area plans, the only maps reproduced there show the coverage areas of these plans, not the actual land use designations that apply within those areas. The only way to determine what the General Plan allows and does not allow on any given piece of land is to look at the area plans themselves.

Further, it appears to be effectively impossible for members of the public to look at these other plans. When an attorney at our firm phoned the County to inquire about obtaining copies, he was told that it take up to 45 days to get copies of all the documents making up the General Plan as it currently exists. Repeated inquiries by our clients over the last few weeks have fared no better. We do not even know whether these cobbled-together plans, which we will call the "Existing Plans" cover the entire County.

When outside plans are so inaccessible, the land use element's references to them are meaningless. They cannot provide substance for the element if no-one can determine what they contain. *See Camp*, 123 Cal. App. 3d at 349 n.8 (criticizing general plan because the "physical composition of this 'general plan' would appear to make resort to it for planning information an awkward exercise and would also seem to generate doubt concerning the integrity of the plan"). The Land Use element, and therefore the General Plan Update as a whole, is inadequate and invalid.

## **II. The DEIR's Description of the Project is Inadequate.**

The DEIR provides a project description of the General Plan that is effectively no description at all. As detailed below, the Project Description sets out very general goals, and then describes demographic predictions about the County's future population. This flawed approach not only makes it impossible to analyze the proposed General Plan's environmental impacts, it reveals the substantial flaws in the Plan itself.

### **A. The Project Description Lacks Sufficient Detail to Allow Meaningful Analysis**

In order for an EIR to adequately evaluate the environmental ramifications of a project, it must first provide a comprehensive description of the project itself. "An accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR." *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal. App. 4th 713, 730 (quoting *County of Inyo v. City of Los Angeles* (1977) 71 Cal. App. 3d 185, 193). As a result, courts have found that even if an EIR is adequate in all other respects, the use of a "truncated project concept" violates CEQA and mandates the conclusion that the lead agency did not proceed in the manner required by law. *San Joaquin Raptor*, 27 Cal. App. 4th at 729-30. Furthermore, "[a]n accurate project description is necessary for an intelligent evaluation of the potential environmental effects of a proposed activity." *Id.* at 730 (citation omitted). Thus, an inaccurate or incomplete project description renders the analysis of significant environmental impacts inherently unreliable. Here, the DEIR for the General Plan does not come close to meeting these clearly established legal standards.

The Project Description section of the DEIR offers essentially no description of the project. Although it states that the General Plan "relies on individual policies to direct growth to preferred locations in response to market forces," (DEIR at 2-8), it never describes those policies, nor does it identify the "preferred locations." It does not explain which parts of the County will be designated for development under the General Plan Update. Instead it merely repeats population projections. These figures give the reader no information about where the General Plan would guide growth or where growth would be discouraged.<sup>1</sup> Nor does the Project Description explain to the public or the Cities how the General Plan would achieve its vision for the County. This failure is ultimately attributable to the General Plan itself—the Project Description cannot explain the Plan's land use program, because the Plan has none.

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<sup>1</sup> While the Project Description does recite a goal stating that it would "[s]trictly limit" growth in agricultural areas outside of existing hamlets, communities, and cities (DEIR at 2-6), this generic reference does not identify the actual locations where growth will be encouraged or allowed.

The DEIR's description of the project is not even accurate with reference to the limited substance the Plan provides. The DEIR states that the General Plan update was designed specifically to achieve and promote consistency with the planning documents of other key land use agencies, most importantly the Cities. DEIR at 4-54. The DEIR, however, never explains how the General Plan would achieve, or even promote such consistency. It does not identify the relevant planning policies, nor does it lay out any design principles that would promote consistency. In fact, several General Plan policies could have the opposite effect: as discussed further in Part III.J below, Policy PF-1.2 may actually encourage inconsistent and incompatible land uses.

**B. The DEIR's Description of the County's Projected Population is Not an Adequate Description of the Project.**

Instead of describing the General Plan's blueprint for the County, the DEIR's Project Description merely states the expected population growth for the County over the Plan's time frame, along with the percentage of the new population expected to live within the Cities. It is nothing more than a projection of population trends; it describes what demographers expect will happen in the absence of any guidance from the General Plan. It cannot even accurately be called a description of the plan. It is rather, a description of how the County will develop *without* a General Plan. It is even deficient at that descriptive task, as it does not indicate how the projected growth will be apportioned among the eight Cities.

Clearly, the recitation of population projections is not an adequate method to describe this project. The project under consideration here is the adoption of a General Plan – consisting of goals, policies, and designated land uses – not merely the change in population that may occur during the life of the Plan. *See* CEQA Guidelines § 15378(a)(1) (The definition of “project” under CEQA expressly includes “the adoption and amendment of local General Plans or elements thereof”). The DEIR must describe the *action* that the County proposes to take—that is, the policies contained in the Plan and the development that these policies will authorize. *See* CEQA Guidelines § 15378(a) (defining “project” as “the whole of an action, which has a potential for resulting in” environmental impacts). This development (including, for example, additional residential, commercial, and agricultural development) will have a range of impacts—including agricultural and biological impacts, among many others—that need to be analyzed in the EIR. As described in the following sections of this letter, the flawed Project Description makes this analysis impossible. The DEIR with its present Project Description cannot support approval of the General Plan; it must be substantially revised and recirculated.

**C. In the Absence of a Land Use Plan, Environmental Review of the General Plan Must Assume the Maximum Allowable Densities.**

The General Plan's lack of a real land use program for the County makes environmental review nearly impossible. Even in its present inadequate state, however, the Plan provides sufficient information for some analysis. An EIR must take into account all of "the future development permitted by the [general plan]." *City of Redlands v. County of San Bernardino* (2002) 96 Cal. App. 4th 398, 409 (citation omitted); *see also City of Carmel-by-the-Sea v. Bd. of Supervisors* (1986) 183 Cal. App. 3d 229, 245.

Table 5.1 of the Goals and Policies Report contains the best information available concerning how much development the General Plan would allow. It describes the range of densities allowed in each general type of area in the County. The DEIR must take Table 5-1 of the Plan at its word. For example, unincorporated lands may carry rural residential designations allowing 1 unit per 5-10 acres. In the absence of further information about where such densities will apply, the DEIR must assume that the maximum allowable density will apply in all unincorporated land and that the allowable density will be fully built out. It must then provide real analysis of the impacts of such development.

Alternately, if the County's position is that the location and intensity of land uses are governed by stitching the Existing Plans together into a single countywide land use scheme (assuming that they cover the entire County), then it must analyze that scheme. In other words, if the Update's proposed locations and intensities for various land uses are depicted in the Existing Plans, then the DEIR must reproduce the assembled plans into a map, and compare the impacts of the development it would allow to existing environmental conditions.

**III. The DEIR's Analyses of the General Plan Update's Environmental Impacts are Inadequate.**

The DEIR's impact sections for the most part simply name potential impacts of the project and, in most cases, call them significant and unavoidable. The DEIR rarely quantifies the impacts, nor even describes their nature and extent. Its analyses read more like a set of general discussions of these types of impacts in a generic county anywhere in California, rather than analyses of how *this* General Plan will effect *this* County.

The DEIR's impact analyses are universally flawed in this manner, because none of them consider the project actually put forth by the General Plan Update. As discussed above, the General Plan Update, in plain violation of the Planning and Zoning Law, fails to put forth an actual land use plan. In the absence of a land use plan, the DEIR treats as its project Countywide population growth, with only general indications as to where the ensuing development will take place. Part II above demonstrates that this population growth is not a project and thus is not the

proper subject of the DEIR's analyses. Instead, the DEIR must consider the full amount of development authorized under the General Plan Update as it has been presented: buildout at the maximum densities allowed in each area of the County, according to Table 5-1 of the Goals and Policies Report. Because the DEIR never looks at the environmental effects of this development, all of its impact discussions are inadequate under CEQA.

The "programmatic" nature of this DEIR is no excuse for the its lack of detailed analysis. A program-level EIR, no less than any other EIR, must provide sufficient detail to allow informed public participation and accurate, quantitative analysis of the project's impacts. *See Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal. 3d 553, 568; CEQA Guidelines § 15151 ("An EIR should be prepared with a sufficient degree of analysis to provide decisionmakers with information which enables them to make a decision which intelligently takes account of environmental consequences.").

In short, the County has two options: either it can revise the General Plan Update so that it presents a real land use plan and then revise the DEIR to analyze that plan, or it can simply revise the DEIR to account for the impacts of the maximum density allowed under the Update as it is currently presented. Whichever route the County chooses, the DEIR needs significant revisions (and therefore recirculation) before it may support approval of any version of the Update. Below, we detail the specific legal inadequacies of the DEIR's various impact sections.

**A. The DEIR's Analysis of and Mitigation for the General Plan's Agricultural Impacts Is Inadequate.**

The loss of agricultural lands to residential and commercial development is one of the most significant challenges facing Tulare County. Preventing such loss should be among the top priorities of this General Plan Update, and evaluating the threat is the essential first step towards protection. The Plan, however, gives the issue little real attention.

**1. The DEIR Fails to Describe the Current Distribution and Designation of Agricultural Land.**

The DEIR's description of the current state of agricultural land in the County is sorely lacking. Every analysis of a project's environmental effects must begin with the description of the environmental conditions before the project— the baseline. Investigating and reporting the baseline conditions is "a crucial function of the EIR." *Save Our Peninsula Committee v. Monterey County Board of Supervisors* (2001) 87 Cal. App. 4th 99, 122. "[W]ithout such a description, analysis of impacts, mitigation measures and project alternatives becomes impossible." *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal. App. 4th 931, 953. Decisionmakers must be able to weigh the project's effects against "real

conditions on the ground.” *City of Carmel-by-the-Sea*, 183 Cal. App. 3d at 246. “Because the chief purpose of the EIR is to provide detailed information regarding the significant environmental effects of the proposed project on the physical conditions which exist within the area, it follows that the existing conditions must be determined.” *Save Our Peninsula Committee*, 87 Cal. App. 4th at 120 (internal quotation marks omitted).

The DEIR fails to meet these requirements. In considering impacts to agricultural lands, the crucial issues are how much agricultural land is under threat of development, and where the threatened land is located. The description of the baseline thus must include not only the total acreage of the different types of agricultural land (prime farmland, farmland of statewide importance, etc.), but an explanation of where the land is located. The DEIR only does the former, and fails to provide a sufficiently detailed explanation of the location of the county’s agricultural lands. The EIR’s reference to the General Plan Background Report cannot solve this flaw: whatever is required to be in the text of the EIR must be in the EIR itself, not buried in some appendix. See *Santa Clarita Organization for Planning the Environment v. County of Los Angeles* (2003) 106 Cal. App. 4th 715, 722-23; *San Joaquin Raptor*, 27 Cal. App. 4th at 727.

The DEIR does explain that most land outside City and community UDBs is agricultural, but this ignores the most important aspect of the issue. Figure 3-7 of the General Plan Background Report shows substantial clusters of residential development throughout the unincorporated county. This map is a start towards an accurate description of the baseline, but it is inadequate for a number of reasons. First, its information dates to 2003. CEQA provides that the proper date for establishing the baseline is “the time the notice of preparation is published.” CEQA Guidelines § 15126.2(a). The Notice of Preparation for this DEIR was published April 25, 2006; Figure 3-7 is thus four years too old to provide a legally sufficient baseline.

Moreover, even if this map were up to date, it lacks sufficient detail to provide a useful baseline. First, it is simply too general— it is on too large a scale to show the important details of the County’s land use patterns. Second, development and agriculture are likely to come into conflict outside City limits, but inside UDBs and Urban Area Boundaries. These areas are where the General Plan’s policies will have the most important impacts, and where they will be most controversial. It is therefore particularly important that the DEIR accurately describe the distribution of agricultural lands in these areas. Figure 3-7, however, does not show urban boundaries, and providing a countywide acreage figure (DEIR at 3-7) does not provide the requisite specificity.

Third, the map shows only actual uses, and does not show the existing land use designations. That is, it does not show how land uses could potentially change under the current General Plan, without the proposed update; such analysis is required under CEQA Guidelines section 15125(d). It is impossible to evaluate how the Update will change the General Plan

without a clear picture of the Plan as it stands today. Of course, as described in Part I, the Plan itself similarly lacks any explanation or map of proposed land use designations. These two deficiencies must both be corrected. The DEIR must be revised to provide a clear, complete picture of current and proposed land uses, or it will remain inadequate.

**2. The DEIR Fails to Quantify the Amount of Agricultural Land Threatened with Development Under the General Plan.**

Having failed to describe existing conditions in the County, the DEIR goes on to fail to describe with the required detail and accuracy the changes that the proposed General Plan will bring. The DEIR does not quantify or even describe the amount and location of agricultural land that would be developed, or threatened with development under the proposed update.

One essential tool for this analysis is a map, or series of maps, showing the present location of agricultural land throughout the County, with an overlay indicating the designations proposed in the General Plan Update. (Of course, to create this map, the County would need to develop a comprehensive land use plan. The need for such a plan is further discussed in Part I above.) As an explanatory tool, this map would provide the public and decisionmakers with crucial information about the areas threatened by development. And as an analytical tool, it would allow the County to calculate the amount of threatened acreage.

In the absence of such a map and comprehensive land use plan, the DEIR must assume that the County will be built out to the maximum density according to the designations listed in Table 5-1 in the Goals and Policies document. This buildout calculation would lead to a projection of vast losses of agricultural land—losses so extensive that the proposed Plan's impacts, and therefore the Plan itself, would be plainly unacceptable. This analysis, however, is clearly required by CEQA, which mandates that an EIR consider the full amount of growth allowed by new General Plan policies. *City of Redlands*, 96 Cal. App. 4th at 409. The best way for the County to avoid the necessity of such burdensome analysis is to develop a land use plan that protects agriculture through concrete and enforceable provisions that prevent development on important farmland.

However the County chooses to perform this analysis, the required end result is clear: the DEIR must quantify the General Plan's specific impacts to agriculture and agricultural land. The present analysis does little more than name the impact and explain, generally, what it means. *See, e.g.*, DEIR at 3-7 ("Future growth resulting from implementation of the General Plan Update could result in both the direct and indirect conversion of agricultural lands to urban and other non-farming uses."). This generic approach is wholly inadequate. *See Whitman v. Board of Supervisors* (1979) 88 Cal. App. 3d 397, 412 ("The use of phrases such as 'increased traffic' and 'minor increase in air emissions,' without further definition and explanation, provides neither the responsible agency nor the public with the type of information called for



under CEQA.”). Without major revisions, this DEIR will remain insufficient to support approval of the General Plan Update.

### **3. The DEIR Fails to Provide Sufficient Mitigation for the General Plan’s Agricultural Impacts.**

The best mitigation for the General Plan’s impact on agriculture would be to revise the Plan so that it did a better job of protecting agriculture, thus avoiding the impact altogether. The conservation easement program identified in Mitigation Measure AG-1.6 is a good complement to plan-level protections, but like so many aspects of the DEIR, it contains too much uncertainty to effectively mitigate the significant environmental impacts.

Moreover, more effective mitigation would be strong, mandatory policies against conversion and for City-centered growth. The General Plan’s agricultural policies, however, do not effectively mitigate the Plan’s agricultural impacts. For example, Policy LU-2.1 states that the “County shall maintain agriculturally-designated areas for agriculture use and shall direct urban development away from valuable agricultural lands to cities.” This is an important goal and a beginning for a strong program of protecting agriculture, but it is not enough, because it does not have behind it the force of mandatory policies, and because what effect it might have is undermined by other aspects of the General Plan.

The first part of the policy—stating that County “shall maintain” the agricultural use of land with agricultural designations—does no real work of its own. It merely states the obvious principle that the County will honor its own land use designations. The threat of agricultural conversion, however, is not that land designated for agriculture will be used improperly. The threat, rather, is that land will be redesignated, from agriculture to a designation more permissive of development. To protect agricultural lands, the General Plan needs strong policies making it difficult to redesignate land away from agriculture. The agricultural policies in Rural Valley Lands Plan, especially Policy RVLP-1.4, are an important step towards protecting agriculture, but they require other, accompanying policies to strengthen them.

For example, Policy AG-1.13 could undermine the point system in Policy RVLP-1.4. AG-1.13 would allow processing facilities on productive farmland, because it states only that such uses “should not” be sited on such land. Once a processing plant was approved via this loophole, it would immediately reduce the point value assigned to nearby land under RVLP-1.4, which gives land a smaller number of points if there are adjacent non-agricultural uses. As those point levels dropped, more lands would qualify for conversion, in a spreading chain-reaction. Changing AG-1.13 to mandate that processing facilities “shall” not be placed on productive land could help prevent such a situation.

This is just one example of a general problem with the General Plan Update—too many policies are permissive rather than mandatory. If the County adopted strict bars on conversion, then it might be able to reduce agricultural impacts to a less than significant level. For example, the County could adopt an absolute bar on conversion to residential use, with policy as follows: “Residential or suburban subdivisions shall be prohibited in areas designated for agricultural use. The division of land in an area designated for agricultural use for the sole purpose of residential subdivision development shall be prohibited.”

The Rural Valley Lands Plan policies, moreover, do nothing to protect land within UDBs, which hold significant amounts of important agriculture. In fact, the General Plan Update does the opposite: as discussed fully in Part III.J below, the Update’s policy concerning County authority within the UDBs is a recipe for sprawl and conversion of agricultural land.

**B. The DEIR’s Analysis of and Mitigation for the General Plan’s Transportation Impacts Is Inadequate.**

**1. The DEIR Contains No Evidence That Its Model Actually Reflects Buildout Conditions Under the General Plan.**

The General Plan’s failure to lay out the distribution of land uses causes significant flaws in the DEIR’s discussion of transportation impacts. Rather than use a land use-based approach to transportation impact analysis, the DEIR is forced to rely instead on a model created by the Tulare County Association of Governments (“TCAG”) that uses population and employment projections to generate traffic data. DEIR at 5-3. The DEIR does not include any information about the model’s methodology or its assumptions. Therefore, it is impossible to tell if it uses the same population and employment assumptions as the plan itself— in other words, there is no evidence that the model is actually analyzing the impacts of the General Plan or of some other scenario. It is possible (though very unlikely) that the TCAG model relied on the same population and employment estimates used in the General Plan, but the DEIR does not provide this basic fact.

Moreover, even if the model’s population and employment assumptions are consistent with the General Plan’s, such statistics alone do not provide sufficient information to determine how the County’s roadway and transit network would operate under the proposed General Plan. The land use component (i.e., the location and distribution of land uses) of the equation is critical to evaluating transportation impacts. As the DEIR states, “transportation and circulation needs are closely tied to the location and distribution of land uses.” DEIR at 5-3.

This is essentially a matter of common sense—to understand transportation impacts, one must know where people live and work and how they will travel between the two. Thus, the DEIR should have used the General Plan’s proposed land use plan as the basis for

evaluating its transportation impacts. But because the General Plan does not include any discernible land use plan, the DEIR could not do so.

In general, transportation impact analyses for development projects – including general plans – follow a fairly routine formula: First, land use locations, densities and intensities must be assigned. This is the key missing step in the present General Plan and DEIR. As described in Part I above, in the absence of more specific land-use designations in the General Plan, the DEIR must assume full buildout at the maximum density available in each part of the County. This will provide the needed data about the location of population and employment. Then, trip generation and trip distribution data should be attributed to each land use; these data will then be combined with background transportation data (e.g., existing roadway and intersection traffic volumes, level of service and public transit service statistics); and, based on these components, the DEIR can estimate the General Plan's impact on the transportation system.

**2. Even if the TCAG Model Effectively Simulates Buildout Under the General Plan, the DEIR's Analysis is Flawed.**

**a. The DEIR's Traffic Analysis Uses an Inappropriate Baseline.**

The DEIR's baseline for establishing transportation impacts – and particularly the document's assumptions regarding the County's future roadway system – is confusing, and in certain instances, contradicts the proposed General Plan. Because the traffic analysis seeks to predict future traffic patterns, it must include data accurately reflecting the future roadway system. It is thus essential the analysis assume only those roadway improvements that are reasonably likely to be in place by the target date of the projection. If the analysis assumes improvements that are unlikely to happen, then it will find traffic conditions to be better than they actually will be.

Here, the DEIR lacks evidence that its analysis relies on accurate information about future improvements. The Methodology section of the DEIR's transportation analysis refers to the list of improvements in the General Plan Background Report, but the Analysis Results section identifies a different list of future roadway improvements. *See* DEIR at 5-3 and 5-5. There is no way for a reader to determine which improvements were actually a part of the traffic modeling. The DEIR also identifies the latter list of roadway improvements as mitigation measures for the Project's impacts. *Id.* Obviously, an improvement that is assumed in the initial analysis of traffic conditions cannot then be counted as a mitigation measure to reduce traffic congestion.

Moreover, the DEIR lists 14 interchange improvement projects that would be needed to support buildout of the General Plan. DEIR at 5-6. Again, it is unclear whether the

DEIR assumed that these interchange improvements would be operational in 2030. These projects are not included in the Background Report's extensive rundown of proposed improvements. There is no evidence of the likelihood that these projects will be completed within the General Plan's timeframe. Moreover, the facts in the DEIR suggest the opposite: together, the cost of these interchange projects would be \$270,000,000 in 2007 dollars, an enormous sum under any fiscal conditions, but one that makes full implementation extremely unlikely in the current budget climate. *Id.*; Background Report at 5-42.

If the DEIR's traffic analysis does, in fact, assume the existence of roadway projects that may not be built within the General Plan's 2030 horizon, then the General Plan is likely to result in transportation impacts far more severe than the DEIR discloses. In order to understand exactly how the County's roadways and freeways would operate upon implementation of the General Plan, the DEIR must clearly document and justify the planning assumptions. Only those transportation improvement projects that are programmed and that have a high likelihood of funding, and consequently a high likelihood for full implementation by 2030, should be included in the transportation model in order to provide a realistic evaluation of future traffic impacts. The DEIR's present analysis lacks any evidence as to whether or not it has taken this approach.

**b. The DEIR Underestimates Traffic Impacts by Failing to Analyze Traffic Impacts During Peak Periods and by Ignoring Traffic Impacts on Intersections.**

Regardless of its assumptions regarding future improvements, the DEIR understates the General Plan's traffic impacts because it uses an inappropriate methodology to evaluate traffic conditions. Specifically, the DEIR's level of service ("LOS") analysis was conducted only for average daily traffic ("ADT"), rather than peak hour or peak period traffic. LOS is typically measured during the weekday a.m. or p.m. peak period or peak hour; that is, the heaviest travel time of any given day. This is most accurate measure of traffic conditions because congestion generally occurs during morning and evening commute periods, not during the middle of the day. *See* Goals and Policies Report at 12-1. Averaging traffic volumes over an entire day could smooth out very high peak volumes. This would then give the impression that the roadway suffered no traffic problems, when in fact there was significant congestion and vehicular delay during commute times. The DEIR's approach of calculating LOS based on ADT understates the true effects of development under the General Plan. CEQA requires that the analysis of periodic impacts, like traffic or noise, account for the peak periods of impact, rather than submerging them in an average. *See Berkeley Keep Jets Over the Bay Committee v. Board of Port Comrs.* (2001) 91 Cal. App. 4th 1344, 1355 (requiring the analysis of single-event noise levels).

The flaws in the traffic analysis methodology extend beyond its failure to evaluate peak hour or peak period traffic congestion. The DEIR's LOS analysis was conducted for roadway segments rather than intersections. While it may be helpful to understand how roadway segments operate, the critical measure of a roadway's capacity is the capacity of its intersections. Intersections, and not roadway segments, are the choke points in a roadway network. While a roadway segment may operate at LOS D, intersections along that same roadway may operate at LOS E or F. As the General Plan itself recognizes, "[o]perational analyses typically focus on intersections rather than road segments since the capacity of the intersections is usually more critical than the capacity of the roadway." Background Report at 21-1. The Plan goes on to prescribe LOS standards for both roadway segments and intersections in Policy TC-1.16. It is, therefore, difficult to fathom why the DEIR ignored this crucial category of impact.

"An EIR must identify and evaluate *all* significant environmental effects of a project." *Citizens to Preserve the Ojai v. County of Ventura* (1985) 176 Cal. App. 3d 421, 428 (emphasis added) (citation omitted). The DEIR, by failing to consider intersection impacts, has failed to live up to this charge. Had the DEIR analyzed peak period intersection LOS, the Project's traffic impacts would certainly be more severe than the DEIR discloses. *See* DEIR Table 5-3.

### **3. The DEIR Fails to Include Feasible Mitigation Measures for the General Plan's Transportation Impacts**

The DEIR comes to the conclusion that no mitigation measures, other than the proposed General Plan's policies, are available to reduce the transportation impacts that would result from implementation of the General Plan. DEIR at 5-7. The DEIR's approach to mitigation fails in two substantive ways: (1) the General Plan policies would not effectively reduce project impacts and (2) other feasible mitigation exists that would further reduce project impacts.

#### **a. The General Plan Policies Would Not Effectively Reduce Project Impacts**

The DEIR determines that the General Plan would result in significant traffic impacts. DEIR at 5-7. CEQA, therefore, requires the identification of mitigation measures to avoid or minimize those impacts. *See* CEQA Guidelines 15126.4(a). The DEIR relies on certain General Plan policies as mitigation to minimize the impacts, but concludes that these measures could not, in fact, reduce them to a less than significant level. DEIR at 5-12. These measures fail to reduce traffic impacts because, among other reasons, they are too vague and are otherwise unenforceable.

CEQA requires that “mitigation measures proposed in an EIR must be “fully enforceable” through permit conditions, agreements, or other legally binding instruments.” Pub. Res. Code § 21081.6(b); CEQA Guidelines § 15126.4(a)(3). Uncertain, vague, and speculative mitigation measures have been held inadequate because they lack a commitment to enforcement. *See, e.g., Anderson First Coalition v. City of Anderson* (2005) 130 Cal. App. 4th 1173, 1188-89 (holding traffic mitigation fee measure inadequate under CEQA due to vagueness in program for implementing required improvements). The policies identified as traffic mitigation do not meet these standards.

For example, the measures call for the County to maintain a public road network (TC-1.1), continue to work with other agencies to assess transportation needs (TC-1.3), work to enhance funding (TC-1.4), and give priority to roadway maintenance to maintain integrity of roadways (TC-1.5). The first two of these are utterly vague and do nothing to actually reduce the traffic congestion impacts identified in the DEIR. The second two might improve the projected congestion problems, if the County actually takes the proposed action, but the policies are in no way binding or enforceable, and thus may not be relied upon as effective mitigation. The purpose of mitigation is to reduce the severity of an environmental impact; the cited General Plan policies do little more than state the County’s interest in reducing traffic impacts. Setting goals is important, but it is no substitute for actually imposing effective mitigation measures.

The DEIR’s failure to incorporate adequate, enforceable, feasible mitigation measures into General Plan policies does not by itself make the Project’s impacts unavoidable; to the contrary, if the DEIR had proposed and analyzed adequate mitigation measures—as required under CEQA—some of those impacts might have been avoided. In order to do this job, the General Plan policies must be revised to make them mandatory and legally binding.

#### **b. Feasible Mitigation Exists**

CEQA requires that an EIR identify, and the decisionmaker adopt, all feasible mitigation measures that would reduce or avoid a project’s significant impacts. Pub. Res. Code § 21002; Guidelines § 15091(a)(3). The agency must comply with this requirement even if the mitigation would not reduce the impact to a less than significant level, as long as the measure would have some mitigating effect. The best way to mitigate the General Plan Update’s traffic impacts would be to reduce both the total number of vehicle trips and the average trip length. Such mitigation would simultaneously reduce the Plan’s traffic impacts, its degradation of air quality, and its contribution to global warming.

In addition to revisions to the General Plan’s policies and implementation measures, the County should evaluate measures to ensure that it is taking all available means to ensure the success of alternative modes of transportation. To this end, the County should develop a list of alternative transportation strategies. These strategies should include project and

community design standards and techniques that have been demonstrated to be effective in achieving any of the following objectives:

- Reducing commute distances and commute times;
- Reducing automobile use, especially single-occupant vehicle automobile trips;
- Encouraging and supporting the use of transit; and
- Encouraging the use of bicycles and walking as an alternative mode of transportation.

Moreover, as explained above, traffic impacts are intimately tied to land use patterns. Once the DEIR has been revised to explain the land use assumptions underlying the traffic analysis, that analysis can be used to re-examine the General Plan's land use policies. For example, if, as seems likely, it turns out that the DEIR projects that significant amounts of traffic will come from commutes between residences in unincorporated areas to jobs in cities, then the General Plan could be revised to mitigate this traffic by shifting residential land use designations into areas inside the UDBs and closer to jobs.

**C. The DEIR's Analysis of and Mitigation for the General Plan's Air Qualities Impacts Is Inadequate.**

**1. The DEIR's Analysis of the General Plan's Impacts From Stationary Sources Is Deficient.**

The southern San Joaquin Valley, including Tulare County, suffers from some of the nation's worst air quality. By its own admission, implementation of the General Plan would cause a substantial increase in air pollution. The DEIR, however, neither comprehensively describes existing air quality in the region, nor explains the health effects that occur as a result of exposure to these pollutants.

While the DEIR's air quality analysis contains extensive flaws, we summarize just a few of the most egregious deficiencies below. We suggest that the County follow closely the San Joaquin Valley Air Pollution Control District's ("SJVAPCD") Guide for Assessing and Mitigation Air Quality Impacts ("GAMAQI"), attached as Exhibit 1. This Guide, produced by the agency with the deepest expertise in Valley air issues, sets the standard for effective, useful analysis of the emissions produced by projects and plans in this region.

The DEIR's analysis of air quality impacts is crippled by the same flaws that afflict the rest of this document: because the General Plan does not describe the distribution of

proposed land uses throughout the County, the DEIR cannot analyze its environmental consequences. At the same time, the air quality analysis, like the traffic analysis discussed in Part II.B above, relies on the TCAG traffic model; because of the DEIR's failure to explain the model's assumptions, it is impossible to determine whether the model accurately reflects the General Plan, as discussed in Part III.B above. Moreover, from the limited information included in the DEIR, it is evident that the estimate of air emissions omits several sources of pollutants.

The DEIR states that development under the General Plan will introduce a variety of new stationary and area sources of emissions to the County, including facilities that use natural gas, landscape maintenance equipment, and woodburning stoves, as well as a variety of industrial and commercial processes. DEIR at 4-50. The DEIR's estimate of operational emissions, however, does not include these sources. Instead it identifies and quantifies only on-road vehicle and dairy/feedlot emissions. *See* DEIR Table 4-2. Unless and until the DEIR is revised to account for the whole of the General Plan's increase in emissions, it will remain inadequate.

The DEIR's conclusions regarding projected vehicular emissions levels are undermined by their reliance on the TCAG model and on an assumed reduction in per-car tailpipe emissions, sufficient to overcome the increased driving due to population growth. DEIR at 4-50. Although the DEIR may be correct about future emissions standards, its conclusion is wholly insupportable in the absence of evidence regarding land use patterns. Put simply, growth in driving is likely to cancel out improved vehicle fuel economy. If future growth occurs in a pattern that encourages more driving than the TCAG model assumes, then the DEIR's conclusions are entirely wrong. Without information about the match between the model and the project development patterns under the General Plan, the DEIR is not supported by the substantial evidence that CEQA requires.

The DEIR's analysis of those emissions sources that it does identify is also flawed. First, it lacks support for its quantification of the increase in emissions from dairy and feedstock facilities. The DEIR explains that dairy and feedstock emissions were estimated in the Tulare County Draft Phase I Animal Confinement Facilities Plan Supplemental EIR ("ACF EIR"), which assumed buildout by the year 2020. DEIR at 4-47 and 4-50. The planning horizon for the Tulare County General Plan, however, extends to 2030. The DEIR does not disclose its methodology for determining the emission estimates for the ten years between 2020 and 2030, and thus lacks substantial evidence in support of its determinations.

Moreover, because the DEIR only identifies year 2030 emissions, it does not accurately assess impacts in the middle of the General Plan's buildout period (i.e., 2015 or 2020). The SJVAPCD recommends an interim year analysis: "[i]f 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)." SJVAPCD GAMAQI at 40.

In addition, the ACF EIR cannot support the DEIR's conclusion, even for the time up to 2020. First, it is inappropriate to rely upon this type of incorporation by reference as substitute for an important analysis of a key environmental impact. "Incorporation by reference is most appropriate for including long, descriptive, or technical materials that . . . do not contribute directly to the analysis of the problem at hand." CEQA Guidelines § 15150(f). Clearly the analysis of emissions from dairy and other livestock facilities "contributes directly" to the analysis of the General Plan's air quality impacts, and therefore should have been included directly in the text of the DEIR, not merely incorporated by reference. Moreover, even if the DEIR could legitimately rely upon an outside document for its analysis and conclusions, it would need to include a thorough description of the ACF EIR's scope and methodology. See *Emmington v. Solano County* (1987) 195 Cal. App. 3d 491, 502-03 (outside reports do not support environmental document where they are not adequately summarized and analyzed).

In order to provide the public and decisionmakers with the information required by CEQA, the DEIR must identify 2030 ROG, NOx and CO emissions with and without the General Plan. In other words, the DEIR must provide the absolute increase in vehicular travel and vehicular emissions from 2008 to 2030. Once these numbers are ascertained, pertinent emission reductions associated with the more stringent tailpipe standards should be applied to the "project" emissions. Decision makers must understand the full range of transportation and air quality assumptions if they are truly to understand the General Plan's impact on the region's air quality.

**2. The DEIR Fails to Analyze Whether the Project Would Violate Any Air Quality Standards or Contribute to Air Quality Violation.**

The proposed General Plan would result in a significant impact if it would violate any air quality standard or contribute substantially to an existing violation. DEIR at 4-48. As discussed above, the General Plan attempts (inadequately) to identify the increase in emissions resulting from the General Plan. The DEIR makes no attempt, however, to determine how this increase in emissions would compare to established air quality standards. We direct the County to the SJVAPCD's CEQA Guidelines, which describe the methodology for evaluating a project's potential for violating air quality standards. GAMAQI at 21 and 22. The revised DEIR must not only accurately identify the emissions that would be generated by buildout of the General Plan; it must also evaluate the effect those emissions would have on the region's air quality.

**3. The DEIR Fails to Adequately Analyze Impacts Relating to the Project's Effect on the Regional Air Quality Plan.**

Rather than analyze how the General Plan's increase in air emissions would affect the SJVAPCD air quality plan, the DEIR generally asserts that the General Plan was designed specifically to achieve and promote consistency with the planning documents of neighboring jurisdictions and other agencies that have jurisdiction over the project. DEIR at 4-54. The DEIR then relies upon a series of General Plan policies to conclude that impacts relating to the General Plan's consistency with the regional air quality plan would be less than significant. DEIR at 4-54. CEQA requires more than this cavalier approach to impact analysis.

To give just one example, ROG emissions from dairy and feedlot operations alone would be 2,570 tons per year, while the SJVAPCD standard is 10 tons. DEIR at Table 4-2. Under the General Plan, emissions from just this one category of source would exceed the applicable standard by more than 250 times. There is simply no justification for ignoring this massive exceedance and refusing to consider the General Plan's impact on regional air quality objectives.

Nor can the DEIR rely on a series of vague General Plan policies to conclude that the Project would not conflict with or obstruct implementation of the applicable air quality plan. Indeed, the DEIR never bothers to specifically explain how each of these policies would reduce emissions in a manner necessary to ensure that implementation of the General Plan would not obstruct implementation of the air quality plan. Moreover, these policies will be ineffective at reducing the Project's air quality impacts because they are vague, directory, and otherwise unenforceable. As already noted, CEQA requires that "mitigation measures proposed in an EIR must be "fully enforceable" through permit conditions, agreements, or other legally binding instruments." Pub. Res. Code § 21081.6(b); CEQA Guidelines § 15126.4(a)(3). Uncertain, vague, and speculative mitigation measures have been held inadequate because they lack a commitment to enforcement. *See, e.g., Anderson First Coalition*, 130 Cal. App. 4th at 1188-89 (holding traffic mitigation fee measure inadequate under CEQA due to vagueness in program for implementing required improvements).

**4. The DEIR Fails to Analyze Impacts Relating to PM2.5 Emissions.**

The federal Clean Air Act requires all states to attain the 1997 standards for the particulate pollutant known as PM2.5 as expeditiously as practicable beginning in 2010, but no later than April 5, 2015. *See* SJVAPCD Proposed PM2.5 Plan, attached as Exhibit 2. Buildout of the Tulare General Plan would result in 2,264 tons per year of PM 2.5. The DEIR, however, failed to determine either whether the Project's substantial increase in PM2.5 emissions would be a significant contribution to the region's already significant PM2.5 problem, or whether it would conflict with or obstruct implementation of the SJVAPCD plan. The DEIR must

undertake this analysis and identify mitigation measures capable of eliminating or reducing this impact. Again, the SJVAPCD has prepared a comprehensive and exhaustive list of strict regulatory and incentive-based measures to reduce PM<sub>2.5</sub> and precursor emissions throughout the Valley. *Id.* at ES-2. In addition to including these measures as mitigation, the DEIR should consider measures to reduce particulate emissions from mobile sources, which are beyond the District's direct jurisdiction. *Id.* at ES-3.

**5. The DEIR Fails to Analyze Adequately the Project's Potential to Expose Sensitive Receptors to Substantial Pollutant Concentrations.**

**a. Exposure to Toxic Air Contaminants**

The DEIR makes no attempt to quantify the increase in toxic air contaminants ("TAC") from build out of the General Plan; instead it defers this analysis' suggesting that these emissions can be controlled at the local and regional level through permitting. DEIR at 4-50 and 4-58. CEQA, however, does not allow an EIR to defer analysis and mitigation to a future time. *Sundstrom v. Mendocino County*, 202 Cal. App. 3d 296 (1988). A project's impacts must be analyzed, disclosed, and mitigated at the "earliest feasible stage in the planning process." *Id.* at 307; *see also* CEQA Guidelines § 15126.4(a)(1)(B) ("Formulation of mitigation measures should not be deferred until some future time."); *Gentry v. City of Murieta* (1995) 36 Cal. App. 4th 1359, 1396.

Moreover, the DEIR fails to evaluate the health risk to sensitive receptors resulting from exposure to TAC emissions. Although the DEIR acknowledges that sensitive land uses near local roadways, for example, could be exposed to air pollutant emissions (DEIR at 4-58), the DEIR stops short of actually analyzing this very serious potential public health impact. This failure, of course, is due largely to the General Plan's lack of a land use plan. Without information regarding the distribution of different land uses, it is impossible to discern where sensitive receptors and TAC-generators might come together. The DEIR should have identified locations at particularly high risk from TACs (e.g., areas along major roadways, rail activity areas, areas near dairy and feedlot operations) and, in mitigation, required any necessary modifications to the County's proposed land use plan, such as the creation of sufficient buffer areas and contingency plans. (These buffers, however, must take into account city plans, as discussed in Part III.J, below.

The DEIR's failure to provide this analysis is particularly disturbing since the California Air Resources Board ("CARB") provides guidance pertaining to TACs and land use development. In April 2005, CARB released the "Air Quality and Land Use Handbook," intended for use by lead agencies when considering the potential risks to sensitive receptors (e.g., schools, homes, daycare centers, medical facilities) from TAC exposures. Land uses that result in such exposures, particularly exposure to combustion-related diesel particulate matter

("DPM"), are rarely required to acquire air quality permits. Therefore, the lead agency must take action to prevent or minimize health risk exposure, and cannot rely on future permitting, as the DEIR has attempted to do. See CARB Air Quality and Land Use Handbook, attached as Exhibit 3.

The CARB Handbook explains that the primary purpose of General Plans, and the source of government authority to engage in planning, is to protect public health, safety and welfare. CARB Handbook at 41. CARB highlights the potential health impacts associated with proximity to TAC sources, and offers guidance and setback distances for a number of land use types commonly associated with TAC emissions. CARB guidance states that "[b]ecause living or going to school too close to such air pollution sources may increase both cancer and non-cancer health risks, we are recommending that proximity be considered in the siting of new sensitive land uses." *Id.* at ES-1. The Guidance further states "what we know today indicates that keeping new homes and other sensitive land uses from siting too close to such facilities would provide additional health protection." *Id.*

Clearly, sound planning principles, along with CEQA's bar on deferred analysis, dictate that the appropriate context for addressing and eliminating these land use conflicts is during a comprehensive update of the General Plan, not at the project-specific level. The Tulare General Plan DEIR should have used this CARB Guidance – both to evaluate the potential health risk associated with implementation of the General Plan and to determine feasible alternative land use patterns if health risks would be elevated as a result of the proximity of sensitive receptors to toxic sources.

Finally, the DEIR again looks to vague and undefined General Plan policies to reduce this impact. DEIR at 4-58. These mitigation measures suffer from exactly the same defects as the EIR's mitigation measures relating to transportation impacts.

#### **b. Carbon Monoxide Hot Spots**

Upon implementation of the General Plan, sensitive receptors in the County would be exposed to almost 11,000 tons of carbon monoxide ("CO") emissions annually. DEIR at Table 4-2. The DEIR does not find this substantial increase in CO to be a significant impact, presumably because CO emissions are expected to decrease between 2007 and 2030 due to strengthened tailpipe standards. *Id.* As discussed above, however, this conclusion lacks the required substantial evidence in support, because it is based on a model whose relationship to the likely development patterns under the General Plan is unknown.

Moreover, the EIR failed to conduct the legally required analysis to determine whether the impact related to carbon monoxide would be significant. Simply analyzing total CO emissions does not give an accurate picture of the impacts of CO emissions. The health

impacts of carbon monoxide are felt locally, at "hot spots" where large amounts of CO collect, usually heavily congested intersections. The only way to determine the potential significance of these impacts is to analyze whether traffic and weather patterns would create such hot spots. Even if the EIR's unsupported assumptions turn out to be correct and countywide CO emissions do drop, if development and roadway patterns are poorly designed, the General Plan could easily lead to CO hot spots and cause significant environmental impacts. The DEIR must determine whether this will happen.

Air quality agencies have made it quite clear that studies of CO concentrations are of paramount importance. According to the Bay Area Air Quality Management District ("BAAQMD"), analysis of localized CO concentrations are important for two reasons:

First, State and federal laws require the region to attain and maintain ambient air quality standards. The region 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 region must safeguard against localized high concentrations of CO that may not be recorded at monitoring sites. Because elevated CO concentrations are generally fairly 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 national standards.

BAAQMD CEQA Guidelines (attached as Exhibit 9) at 37.

This potential impact must be analyzed or the DEIR will remain inadequate.

**6. The DEIR Fails to Adequately Analyze the Potential for Development Under the General Plan To Create Objectionable Odors.**

While the DEIR describes the types of odors associated with dairy and feedlot development, it falls short of analyzing how these odorous emissions would impact existing and future sensitive receptors. Again, the DEIR defers this important analysis and concludes, absent any evidence, that impacts relating to odorous emissions would be mitigated to a less than significant level. The DEIR lacks evidence for its conclusion because the General Plan lacks the information required for the analysis. The DEIR can hardly conclude that no sensitive receptors will be affected by dairy or feedlot odors if there is no plan to ensure that such receptors will not be located near the odor sources.

As discussed above, the purpose of the General Plan is to guide the growth and development of the County. Locating adequate sites for dairy and feedlot development will

become more difficult upon buildout of the County. Sensitive land uses must be protected from incompatible uses such as dairies and feedlots. Had the County prepared its General Plan in a manner that outlined present land uses and the location of all proposed land use designations, the DEIR would then be able to evaluate these potential impacts. Under the General Plan as currently proposed, with its lack both of a land use plan and of effective policies to avoid odor-related land use conflicts, the DEIR must assume that the County is built out to the maximum density allowable pursuant to the Goals and Policies Reports, Table 5-1. It must then estimate how many sensitive receptors are likely to be within affected area of odor-producing facilities. This calculation will allow the determination of the severity of the impact, which is likely to be significant.

The DEIR identifies mitigation measure AQ-4.8 (Odor Management Plan for Dairy and Feedlot Operations) as having the potential to reduce odorous emissions. The DEIR stops short, however, of providing any specificity regarding the potential for "odor control strategies" to reduce odors to a less than significant level. Without such specificity, there is no evidence to support the DEIR's conclusion that the measure will reduce odors to a less than significant level. And without such evidence supporting the conclusion, the EIR is inadequate. *Save Our Peninsula Committee*, 87 Cal. App. 4th 99 at 130 (EIR must analyze efficacy of mitigation). Moreover, without a corresponding land use program (i.e., appropriate buffer zones), even the best odor control strategy will be ineffective if neighboring uses are located too close to dairy and feedlot operations.

## **7. The DEIR Fails to Identify Feasible Mitigation Measures**

As discussed above in the context of mitigation for transportation impacts and below in the context of climate change impacts, the DEIR fails entirely to identify adequate mitigation for the General Plan's significant air quality impacts. Mitigation measures discussed above in connection with transportation impacts would, if implemented, result in a substantial reduction in criteria pollutant emissions. CEQA therefore requires this DEIR to identify such measures before the Update maybe approved.

### **D. The DEIR Inadequately Analyzes and Mitigates the General Plan's Contribution to Climate Change.**

#### **1. The DEIR Fails to Account for All of the General Plan's Greenhouse Gas Emissions.**

Although the DEIR recognizes that implementation of the General Plan would contribute to global warming through increased emissions of greenhouse gases (DEIR at 4-65), the document fails to recognize the severity and extent of the looming climate change crisis or the role that Tulare County's General Plan, if implemented, would play. The General Plan DEIR

acknowledges that annual carbon dioxide emissions under the General Plan would be 1,449,888 metric tons per year and methane gas emissions would increase by 283,815 tons per year. *Id.* The document finds that this increase in greenhouse gas ("GHG") emissions would contribute to ongoing of climate change and aptly concludes that this impact is significant. *Id.*

The DEIR's quantification of the General Plan's contribution to climate change, however, is inaccurate and unsupported. Like the analysis of impacts to air quality, the climate change analysis considers only emissions from motor vehicles and from dairies and feedlots. Approximately 21 percent of California's carbon dioxide emissions come from electrical power generation, but the DEIR ignores the emissions that would be attributable to the generation of electricity for new development under the General Plan. All such emissions must be considered part of the General Plan's contribution to global warming.

Moreover, the DEIR's analysis of vehicular emissions is itself flawed. Like the air quality and traffic analyses, its consideration of climate contributions relies entirely on the TCAG model. As discussed above, there is no evidence that the TCAG model matches the land use patterns that would be established under the General Plan. To accurately quantify greenhouse gas emissions, the DEIR should calculate the number of vehicular trips and the overall vehicle miles traveled (collectively, "VMT") attributable to development under the General Plan.

Under the Plan as currently proposed, the DEIR must calculate VMT assuming buildout at the maximum allowable densities. This will, no doubt, lead to a tremendously large VMT figure and huge greenhouse gas projections. This is yet another indication that the County should develop a comprehensive land use plan as a part of this General Plan Update. Once it does so, the calculation of VMT will be an important tool for refining the plan—the metric can vary tremendously depending on the density, intensity and locations of land uses. The increase caused by implementation of the General Plan would signal whether the Plan's land uses are efficiently designed. Specifically, sprawling land use patterns result in vehicle trips substantially greater in number and length than would city-centered development.

As the DEIR admits, less than one-half of one percent of the County's work related trips are made on transit (Background Report, Table 5-16) and the County appears to be making a conscious choice to continue to facilitate auto-based travel. Because the proposed General Plan, as discussed in Part III.K, would lead to sprawling development, it is likely that the best way to cut down on VMT, and therefore on greenhouse gas emissions, will be to alter the Plan to favor denser development, keeping jobs and residences close together. The EIR errs in its absolute failure to analyze how the General Plan's policies that encourage the use of the private automobile have dire consequences for climate change. With its present approach to land use and development, Tulare County will never be able to even maintain, let alone reduce, its generation of GHG emissions.

**2. The General Plan and DEIR Must Recognize that Uncontrolled, Sprawling Growth Undermines State Greenhouse Gas Reduction Goals.**

Reducing greenhouse gas emissions—rather than merely restraining their growth—is essential in light of the Legislature’s enactment of AB 32, the California Global Warming Solutions Act. This new law requires that California’s greenhouse gas emissions be reduced to 1990 levels by 2020. The DEIR appropriately acknowledges that by contributing to, rather than reducing, the County’s and California’s overall emissions, the General Plan will have a significant environmental impact. But this acknowledgment is insufficient: the DEIR is entirely wrong, however, when it concludes that this impact is unavoidable. Tulare County has the ability to create and adopt a General Plan that advances the goals of AB 32, and this is the moment for it to do so.

Like every other urbanizing region, Tulare County is at a critical crossroads. It can take the “business as usual” approach embodied in the current General Plan proposal, allowing or even encouraging decentralized land use development that creates spread-out communities and increases auto travel. Or it can make the decision to grow in a sustainable manner. The Legislature and the people of California have decided that this state must move toward sustainable growth. Tulare County’s insistence on working against this goal is unjustifiable. Sound urban planning principles—as well as diminishing oil supplies and the looming global warming crisis—dictate that the primary way to substantially reduce vehicular use is by promoting city-centered growth and significantly expanding transit infrastructure and services.

**3. The DEIR’s Approach to Climate Change Mitigation Is Utterly Deficient.**

The DEIR relies solely on vague and unenforceable General Plan policies to mitigate its significant contribution to global warming. CEQA requires more. “The purpose of an environmental impact report is . . . to list ways in which the significant effects of such a project might be minimized . . . .” CEQA § 21061. The Supreme Court has described mitigation as part of the “core” of an EIR. *Citizens of Goleta Valley*, 52 Cal. 3d at 564. It is important to note that the DEIR’s obligation to identify mitigation is not diminished even if no available mitigation would reduce the impact all the way to a less-than-significant level. Any measure that will reduce the severity of the impact is still useful, and still must be identified and analyzed. *Cf. Santiago County Water Dist. v. Orange County* (1981) 118 Cal. App. 3d 818, 831.

The DEIR looks to General Plan policies to address global warming impacts. Yet, as discussed above, these policies are voluntary, flexible, and unenforceable in nature. The majority of policies and programs listed include terms like “as feasible,” “shall cooperate with,” “shall work to comprehensively study,” “shall encourage” and “shall investigate the feasibility



of.” As such the DEIR provides inadequate commitment to substantive, enforceable climate change mitigation and protection, and fails to provide mechanisms to ensure that climate change mitigation will evolve, as appropriate, while enduring across the twenty year project lifespan. Generally, policies that call for “encouraging,” and “supporting” should be modified to actually require the implementation of the policies’ programs. For example, where Implementation Measure 9 calls for the County to continue to increase expansion and enhancement of existing public transit services, this measure should be changed to “implement and impose an enforceable requirement on developers to contribute toward enhanced transit service” or “adopt a transit mode share goal.”

The DEIR does include a mitigation measure calling for the preparation of a GHG emission reduction plan, yet this measure contains no insight as to how the GHG plan, once prepared, would provide a meaningful reduction in GHG emissions. The measure contains no performance standards or specific criteria for the GHG plan and thus fails to meet CEQA’s standards for mitigation. In essence, we can find no evidence that the County is seriously committed to offsetting the substantial increase in GHG emissions that would result from implementation of the General Plan.

Additional actions to reduce GHG emissions have been demonstrated to be feasible evidenced by their adoption by other jurisdictions in California. Tulare County should consider adopting all feasible mitigation measures using the powers the County has to enact ordinances and control development characteristics to reduce GHG emissions.

**E. The DEIR Inadequately Analyzes and Mitigates the General Plan’s Energy Impacts.**

One of the DEIR’s glaring flaws lies in its discussion of the General Plan’s potential impacts on energy resources. CEQA requires that EIRs include a discussion of potential energy impacts of all proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy. See Pub. Res. Code § 21100(b) (requiring mitigation measures to “reduce the wasteful, inefficient, and unnecessary consumption of energy”); CEQA Guidelines, Appendix F (“Energy Conservation”). This requirement is “substantive and not procedural in nature and was enacted for the purpose of requiring lead agencies to focus upon the energy problem in the preparation of the final EIR.” *People v. County of Kern* (1976) 62 Cal. App. 3d 761, 774-75.

Despite this clear mandate, the DEIR effectively ignores the energy consumption of development under the proposed General Plan. Its discussion of energy conservation is completely generic and includes no information specific to Tulare County or the General Plan, other than naming the County’s energy providers. At a minimum, CEQA requires that the DEIR include detailed information on the project’s projected energy requirements, a discussion

of existing energy use patterns in the County, an assessment of the Plan's impacts on energy resources, mitigation measures to minimize energy consumption, and an alternatives analysis that compares alternatives in terms of overall energy consumption. *See* CEQA Guidelines, Appendix F. Without such an analysis, the public and decision-makers have no way to evaluate the General Plan's potential impacts on energy resources, and the DEIR is thus not legally adequate under CEQA.

Moreover, the DEIR relies upon inadequate mitigation measures to reduce the Plan's energy impacts to a less than significant level. None of these measures is binding, and there is no evidence in the DEIR that any will be effective. For example, Policy ERM-4.1 states the County "shall encourage" various energy-efficient features in new construction. Similarly, Policy ERM-4.2 calls for the County to "promote" the planting of shade trees. These policies are insufficient, because they offer nothing to ensure that these features will ever actually be implemented. They empower the County to nothing more than make suggestions. The County must provide serious, enforceable mitigation to increase energy efficiency in development under the General Plan. Many of the measures listed above in our discussion of global warming strategies would also serve well to improve energy conservation.

**F. The DEIR Inadequately Analyzes and Mitigates the General Plan's Water Supply Impacts.**

Throughout Tulare County, but especially in the smaller communities and hamlets, the quantity and quality of water supplies cannot be taken for granted. It is therefore quite disappointing that the DEIR gives the analysis of water supplies such short shrift. Under CEQA, an EIR must clearly identify the proposed water supply for the entire project under review, and must then analyze the reliability of that supply. *See, e.g., Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal. 4th 412, 431-32; *Santa Clarita Organization for Planning the Environment* (2003) 106 Cal. App. 4th at 722-24; *Napa Citizens for Honest Government v. Napa County Board of Commissioners* (2001) 91 Cal. App. 4th 342, 373-74. If the proposed supply is uncertain to provide the needed water, the EIR must also identify an alternative source. *Vineyard Area Citizens*, 40 Cal. 4th at 432. The EIR must finally analyze and disclose the potential environmental impacts of tapping these sources. *Id.*

The DEIR completely fails to follow these well-established and legally-required procedures. Charged with considering the specific impacts of adding over 250,000 new people to the County's population, the DEIR makes no attempt to figure out where they will get their drinking water. Identifying a water supply is not only a clear legal obligation of an EIR, as a matter of policy it is also one of a planning agency's most important jobs. Water supply can be a serious constraint on growth, but jurisdictions across the state have historically taken it for granted, securing reliable supplies only after approving projects. Although planning in many

places has improved in recent years, the DEIR appears to be following the old pattern of assuming, or hoping, that water supply can keep up with demand.

Water supply planning is serious business in Tulare County. When the members of the Council of Cities come to the Local Agency Formation Commission with annexation and development proposals, Commissioners consistently—and appropriately—ask tough questions about water supply, ensuring that the cities do not take on projects without knowing, well ahead of time, that water is available. CEQA, and good public policy, demand that the County ask itself the same hard questions.

Instead of determining how projected demand and supply match up, the DEIR merely lists the various water supplies of the cities, communities, and hamlets, and states whether each of these systems has excess capacity or not. DEIR at 4-107 to 4-119. This exercise provides a good start for the required analysis, but it does not fulfill the DEIR's obligations. This approach fails to take the first step in any serious water analysis: quantifying supply and demand. The description of the various water systems is almost entirely qualitative, and never states just how much excess capacity any given system has. At the same time, it describes growth only in terms of population, not water demand. The DEIR thus provides no means for evaluating its claims that some communities have "more than adequate" water supplies, while some water systems are "adequate with concerns." This failure leaves the DEIR unable to perform one of its essential tasks: providing the public and decisionmakers with sufficient facts to draw their own conclusions. See *Citizens of Goleta Valley*, 52 Cal. 3d at 568; Pub. Res. Code § 21080(e)(1)-(2).

To analyze this issue fully, the DEIR must explain how much new demand is expected in each of the cities, communities, and hamlets and determine whether each water system will have supply to meet projected demand. This analysis would require the accurate quantification of each system's supplies; the DEIR would need to explain the presently undescribed "concerns" that it mentions in connection with several of the systems. *E.g.*, DEIR 4-112 (discussing California Water Service Company in Goshen); 4-118 (Three Rivers CSD). If this analysis shows that demand will exceed supply in a given area, then the DEIR must identify the steps required to increase capacity or obtain new water sources and consider the environmental impacts of obtaining this supply, including the impacts of constructing any required infrastructure.

The General Plan Update's water supply policies serve only to cover over the DEIR's failing. Requiring demonstrated water only on a project-by-project basis, as do Policies WR-3.3 and PFS-2.2, is likely to lead to a haphazard scramble for supplies, as well as the potential overcommitment of limited resources. The County needs to identify and quantify available supplies now, in order to guide growth to those areas with sufficient surpluses to support it. The currently proposed policies should certainly remain in the General Plan, although

they ought to be strengthened to make clear that the County will not approve any project that does not demonstrate a sufficient water supply over the long term. But these policies are no substitute for the extensive water-supply analysis that CEQA requires of this DEIR.

In its discussion of cumulative water supply impacts, the DEIR relies on state water planning statutes, SB 610 and SB 221, to prevent such impacts. This reliance is misplaced and unsupported. The existence of these statutes does nothing to relieve the EIR of its obligation to explain the County's water supply plans and to analyze the environmental impacts of these plans. Moreover, it is not clear that these laws will do the job that the DEIR claims. Their requirements apply only to developments over a certain size—generally, 500 residential units. *See* Government Code § 66473.7(a)(1). The DEIR asserts that “[m]ost new development throughout the County” would meet the statutory thresholds, but it offers no evidence. There is nothing in the DEIR to indicate that development would follow this pattern, and in the absence of a land use plan, there is no reason to believe that development will proceed through such large projects, rather than through the haphazard growth of smaller subdivisions. Knowing that the County is relying solely on state mandates, and not performing its own water supply inquiries, developers are likely to size their projects in order to evade review under SB 610 and SB 221. The County may well see a sudden increase in the number of 499-unit subdivision applications. In short, in the absence of substantial evidence, the County cannot rely on the mere assumption that state laws will prevent any cumulative water supply impacts.

Despite failing to quantify the problem, the DEIR acknowledges that there may be a countywide shortfall in water supply as compared to projected demand. DEIR at 4-127. Under CEQA, this determination triggers the DEIR's obligation to identify alternate sources. *See Vineyard Area Citizens*, 40 Cal. 4th at 432. The DEIR's vague mention of “[n]ew or expanded entitlements or facilities” (DEIR at 4-127) does not fulfill this mandate. Until the DEIR is revised to provide serious analysis of the water supplies available for growth under the general Plan Update, it will remain inadequate and any approval based on this document will be invalid.

**G. The DEIR Inadequately Analyzes and Mitigates the General Plan's Impacts Related to Public Services.**

The DEIR treats impacts related to public services in essentially the same indifferent manner that it analyzes water supply issues. An EIR must consider a project's physical impacts on the environment. The purpose of analyzing public services is to determine whether a project will lead to additional demand that could, in turn require construction or other activities that might have environmental impacts. The DEIR goes through the motions of performing this analysis, but in the end produces only generic descriptions of potential impacts, with no specific information about what might actually happen under the General Plan.

The DEIR's discussions of schools, fire protection, police services, sanitary sewer, landfill, and water treatment all follow the same pattern. The DEIR acknowledges that new facilities will likely be needed, and then reels off a brief list of the types of impacts that might occur and declares the impacts to be unavoidable. In effect, the DEIR simply states that there could be impacts and moves on. It does not explain by how much demand will exceed supply or when in the life of the General Plan Update new facilities might be needed, nor does it give any indication of *where* new construction might take place. This analysis is insufficient; the DEIR must include more detail about the specific impacts connected with each type of facility before it will be adequate under CEQA. *See Whitman*, 88 Cal. App. 3d at 412 ("The use of phrases such as 'increased traffic' and 'minor increase in air emissions,' without further definition and explanation, provides neither the responsible agency nor the public with the type of information called for under CEQA.").

The DEIR's failure is particularly galling with regard to major public facilities like water treatment plants and landfills. Appropriate sites for such facilities are rare and can be controversial. This General Plan Update is exactly the moment for the County to begin considering the available location and evaluating their environmental merits. Planning for these types of infrastructure challenges is one of the purposes of the General Plan. The County, however, has opted again not to undertake any planning, but instead to put it off until demand begins to catch up with supply and the need becomes acute. We urge the County to take a more forward-looking approach to planning for public services.

**H. The DEIR Inadequately Analyzes and Mitigates the General Plan's Impacts on Biological Resources.**

The DEIR's treatment of impacts on biological resources is deeply flawed. In the bare handful of pages taken up by its discussion of such impacts, the DEIR never finds the space to provide the most basic information about the County's animals and plants: there is no list in the DEIR of special-status species nor comprehensive catalog of sensitive habitats. DEIR at 4-12 to 4-22. Similarly, the DEIR includes no map of riparian and wetland areas, nor even a

textual description of their locations. The DEIR's reference to the General Plan Background Report is no substitute for actually describing the environment; once again, whatever is required to be in the text of the EIR must be in the EIR itself, not buried in some appendix. *See Santa Clarita Organization for Planning the Environment*, 106 Cal. App. 4th at 722-23.

The DEIR thus fails to provide the required explanation of the existing environmental baseline, and so is inadequate from the start. The inadequacy continues into the impact discussion itself. Like many of the other impact analyses in the DEIR, this one is essentially a generic discussion of the types of impacts that development might cause. It includes no specific information about either the threatened resources or about the nature and extent of the threat. This discussion does not come close to meeting CEQA's standards.

To analyze impacts to biological resources, the DEIR would need to include not just lists of species and habitats, but maps showing their locations (and migration corridors) in the County and textual explanations of the species' needs and their status—a discussion, that is, of how rare they are locally and overall, and how development under the General Plan might threaten them. Having established the baseline, the DEIR would then need to compare the locations of habitat and species to the locations of development, and to propose concrete, enforceable mitigation measures to protect any threatened resources. Of course, if the General Plan is not revised to include a land use plan, then this analysis must look to the maximum densities presented in Table 5-1 of the Goals and Policies Report, or to existing plans in order to determine where development will effect biological resources. Until it follows these steps, or undertakes some similar procedure to determine the potential impacts of development under the General Plan, this DEIR's analysis will remain thoroughly inadequate.

#### **I. The DEIR Inadequately Analyzes and Mitigates the General Plan's Impacts to Scenic Resources.**

The DEIR's analysis of the visual impacts of development under the General Plan Update follows the same unfortunate pattern as the section on biological resources: it attempts neither an accurate description of the County's current scenery and visual resources nor a serious consideration of the effects of development under the General Plan. As in the biological resources chapter, the required information about the environmental baseline is buried in an appendix rather than presented in the DEIR itself. This alone demonstrates the inadequacy of the DEIR's analysis. *See Save Our Peninsula Committee*, 87 Cal. App. 4th at 120 (“[E]xisting conditions must be determined.”); *Santa Clarita Organization for Planning the Environment*, 106 Cal. App. 4th at 722-23 (holding that all required parts of an EIR must be in the EIR itself). The DEIR then goes on to discuss visual impacts in only the most generic and superficial terms. It never explains which scenic areas may be affected or what type of development might mar these areas. There is no real explanation of the concrete impacts of development under the general plan, only vague generalities about the types of impacts that might be expected. This

discussion includes nothing to distinguish this analysis from the analysis of visual impacts in Fresno, Imperial, or Modoc County. The DEIR completely fails at its obligation to perform thorough, site-specific analysis of the impacts of the General Plan Update, and cannot support approval of the General Plan.

**J. The DEIR Inadequately Analyzes the General Plan's Analysis of Land Use Impacts.**

The DEIR concludes that the General Plan Update will not conflict with any of the general plans of the eight incorporated cities in Tulare County. In fact, the General Plan appears to be custom-built for generating land use conflicts. The key problem is Policy PF-1.2. This policy would allow the County to approve projects within a city's UDB when the city "does not consent to annexation." In other words, after a city rejects a project in its UDB, the project proponent could then turn to the County, which could go ahead and approve the project. This second-guessing is clearly a formula for land use conflicts. The refusal to annex the project site most likely indicates the city's judgment that the proposed use does not fit with its land use blueprint. This policy, however, allows the County to overturn that judgment and approve the project anyway.

Under this proposed policy, the County's own judgment is the only check on its ability to approve projects rejected by a city. Under subsection 1.a.ii, the County, and no one else, may determine that the project "does not constitute leapfrog or noncontiguous development," and under subsection 1.a.iii, the County, and no one else, may determine whether the project is a "regionally significant proposal." These requirements are highly subjective, and would present little obstacle to approval of many projects that conflict with cities' plans for such areas. And with no land-use map to guide its decisions, the County will be free to approve any project, in any place, that seems appealing at the moment.

Most egregiously, under subsection 1.c, the County would determine whether the project is "compatible" with the city's general plan. Giving one jurisdiction the authority to interpret another jurisdiction's general plan is an open invitation to land use conflicts. Simply put, the County might have a different idea about whether a given project is compatible with a city's general plan than the city itself would. The city, meanwhile, would be making annexation and land use decisions on adjacent and nearby parcels, making consistency decisions according to its own interpretation of the general plan. Giving two different decisionmakers, with different interests, authority over essentially the same area makes conflicts inevitable.

The main effect of Policy PF-1.2 will be to increase development in unincorporated land adjacent to, but not within, cities. Regardless of the findings required to approve such projects, sprawl and the conversion of agricultural lands is the inevitable result of a policy that flatly rejects the strategy of concentrating development within city limits. The

General Plan's failure to provide a comprehensive land use map or plan will only exacerbate this problem. Between the lack of an overall program to guide growth and only loose standards governing project approval, haphazard development is bound to result. And given the nature of the UDB, these areas would become part of the city in a relatively short time, and the County-approved, sprawling development—with all its attendant costs and environmental impacts—would soon become the city's problem.

Moreover, the County would apply different development standards than would the city. For example, it might not mandate right-of-way improvements, such as curbs and catchbasins scaled to future development levels, where the city would impose such requirements. Or the County might allow the use of individual septic systems in an area where the city is concerned about groundwater quality and planned to extend sanitary sewer lines. Once again, any problems caused by these mismatched standards would soon become the city's, once its boundaries expand as planned, toward the UDB. The proposed policies regarding development near incorporated cities will clearly lead to land use conflicts.

The proposed General Plan Update would also interfere with the cities' land use plans through Policy PF-4.3, which would "discourage" the expansion of a city's UAB or UDB if the boundary, pre- or post-expansion, would be within one mile of an active dairy. The concept of these urban boundaries is that the UDB sets a boundary for the city's present expansion plans, while the UAB sets the city's ultimate intended boundary. Inherent in this framework is the idea that over time, a city's UDB will be expanded to meet its UAB; this endpoint is included in several, if not all, of the general plans of the members of the Council of Cities.

Policy PF-4.3 would severely limit the cities' ability to follow through on these plans. The map included as Exhibit 4 to this letter shows the area covered by a one-mile buffer around all of the County's active dairies. Even without including expected expansion of this important industry, the buffer zones come all the way to the already-developed areas of several of the cities—most notably Visalia and Tulare—and leave very little room for them to expand their UDBs. This limit on the cities' growth is likely to get tighter as more dairies come to Tulare County. By preventing these planned expansions, the General Plan Update creates a worrisome conflict with the cities' land use policies and plans.

The buffer zone is a good policy in concept, and the cities of course wish to protect their citizens from any ill effects of living near dairies. But the cities must be allowed to grow in accordance with their own plans and at their own pace. Environmental issues that arise from such boundary expansions should be resolved collaboratively; the County should not impose a solution unilaterally, as it proposes to do with this policy.



The DEIR is therefore clearly incorrect when it denies that the Update would result in land use conflicts. The only way to avoid such conflicts is to revise the policies discussed here. Policy PF.1-2 should bar the County from approving projects that a city has rejected. Specifically, any development occurring on unincorporated sites within city UDBs should occur only with the consent of the cities, consistent with city general plans and development standards, and with an effective plan in place to permit future annexation into the affected city. And Policy PF-4.3 should acknowledge that boundary expansion and development near dairies should be considered on a case-by-case basis, and that such consideration must take into account longstanding city plans for expansion. Moreover, to prevent new dairies from unduly constricting cities, a new policy should be created: the County should not approve new dairies within one mile of a current or planned city UAB. This policy will allow the orderly boundary expansion that the cities have consistently planned for, while preventing land use conflicts. Without these alterations, the General Plan Update will remain in conflict with city land use plans, a conflict the DEIR must acknowledge.

**K. The DEIR Inadequately Analyzes the General Plan's Cumulative Impacts.**

The DEIR's cumulative impact discussions, though brief, take several different approaches to the required analysis. All of these approaches are flawed. Some lack evidence that they consider all of the cumulative projects in the area. Others, like most of the DEIR's impact discussions, lack any actual analysis of the project under review. Still others make the error of dismissing cumulative impact analysis because the impact of the General Plan, in isolation from the regional context, would be less than significant.

Under the CEQA Guidelines, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts" CEQA Guidelines § 15130(a)(1). Because "[c]umulative impacts can result from individually minor but collectively significant projects" (CEQA Guidelines § 15355(b)), an impact that appears less than significant (or mitigable to such a level) when only the project is scrutinized may turn out to contribute to a significant cumulative impact. In that case, the EIR must determine whether the project's contribution is "cumulatively considerable;" that is, whether its "incremental effects . . . are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." Guidelines § 15065(a)(3); *see also Kings County Farm Bureau*, 221 Cal. App. 3d at 729. This mandate assumes even greater importance for a program-level EIR such as this one. *See* Guidelines § 15168(b)(4) (programmatic EIR allows agency to "consider broad policy alternatives and program-wide mitigation measures" at an early stage when the agency has greater flexibility to deal with cumulative impacts.)

Several of the DEIR's discussions of cumulative impacts appear to assume that because implementation of the General Plan would result in additional countywide development,

the analysis of the General Plan is inherently cumulative. *E.g.*, DEIR at 8-13 (discussing traffic impacts), 8-7 (discussing air quality impacts), 8-10 (noise impacts). This assumption is incorrect for several reasons. The cumulative impacts concept recognizes that “[t]he full environmental impact of a proposed . . . action cannot be gauged in a vacuum.” *Whitman*, 88 Cal. App. 3d at 408. Here, the DEIR’s approach to these cumulative impacts ignores pending projects and projects outside the County.

The DEIR relies on the TCAG model for purposes of evaluating all of these impacts, and therefore never actually identifies the incremental addition that the General Plan’s land use policies would make to traffic in the County (and therefore to emissions and noise). As a result, it is not possible to determine whether the incremental effect of the proposed General Plan is cumulatively considerable when viewed in comparison to region-wide traffic. There are dozens of pending projects in various stages of the entitlement process throughout the County, including projects within the Cities. In addition to the handful listed in the DEIR, there are those listed in Exhibit 5 to this letter. The current General Plan, not the Update, will likely govern the approval of many, if not most of these. An adequate cumulative impact analysis would require accounting for these projects, but it is entirely unclear whether the DEIR did so.

Moreover, it is unclear whether the TCAG model accounts for traffic generated outside the County but using County roads. Two of the main traffic corridors, SR 99 and SR 198, are important inter-county connections that carry significant amounts of traffic traveling across the state. This traffic contributes to congestion and noise in the County, and to air quality problems in the region. Moreover, several communities in other counties, notably Delano and Corcoran, are immediately adjacent to Tulare County, and may contribute traffic, noise, and localized emissions to smaller, local roads. All of these impacts should have been included in the cumulative analysis, but there is no way to tell from the DEIR whether they were. The DEIR thus lacks substantial evidence in support of its conclusions, and is inadequate.

Even when the DEIR does recognize the regional context of cumulative impacts, it stops short of providing any real analysis. For example, in discussing cumulative impacts to biological resources, the DEIR repeats the errors of its main impact analysis. Rather than actually analyzing and disclosing region-wide impacts, it merely states there could be impacts, and offers nothing more. DEIR at 8-8. The DEIR takes a similarly flawed approach to several other cumulative impacts, including impacts related to aesthetics (DEIR at 8-6), agricultural lands (DEIR at 8-7), solid waste (DEIR at 8-10), fire protection (DEIR at 8-11), and wastewater (DEIR at 8-12). These discussion, like their counterparts in the main body of the DEIR, must be wholly revised so that they actually analyze, rather than merely gloss over, the General Plan’s impacts.

Finally, several cumulative impact discussion miss the point of cumulative impacts entirely, concluding that because a given impact would not be significant based on the General

Plan Update alone, it would not make a considerable contribution to cumulative impacts. *See* DEIR at 8-9 (hazards), 8-11 (law enforcement, schools). The very purpose of cumulative impact analysis is to determine whether impacts that appear insignificant in isolation add up to damage the environment. Thus, the fact that individual projects have only less than significant impacts is no answer to the question whether they, taken together, have a cumulative impact. *See Kings County Farm Bureau*, 221 Cal. App. 3d at 720. The DEIR must take a hard look at the overall impacts of the General Plan Update, along with past, present, and future projects, and determine whether the Update's impacts are cumulatively considerable.

#### **IV. The DEIR's Analysis of Alternatives to the Proposed General Plan Update is Inadequate.**

As discussed above, this General Plan Update will help determine the shape of growth in Tulare County for decades to come. Determining which policies become a part of the Plan is likely to be one of the most important decisions the current Board of Supervisors will make. It is thus crucially important that the Board and the public have all of the available information before it.

This DEIR, of course, is the main vehicle for that information. And at the "core of an EIR" lies the analysis of alternatives. *Citizens of Goleta Valley*, 52 Cal. 3d at 564. "Without meaningful analysis of alternatives in the EIR, neither the courts nor the public can fulfill their proper roles in the CEQA process . . . . [Courts will not] countenance a result that would require blind trust by the public, especially in light of CEQA's fundamental goal that the public be fully informed as to the environmental consequences of action by their public officials." *Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.* (1988) 47 Cal.3d 376, 404. An EIR therefore must analyze a reasonable range of alternatives to the proposed project. *Citizens for Quality Growth v. City of Mount Shasta* (1988) 198 Cal. App. 3d 433, 443-45. A reasonable alternative is one that would feasibly attain most of the project's basic objectives while avoiding or substantially lessening the project's significant impacts. *See* Pub. Res. Code § 21100(b)(4); CEQA Guidelines § 15126.6(a).

This DEIR, although it presents some worthy alternatives, does not live up to these standards. Its analyses of the alternatives—like almost all of its impact analyses—lack any quantification of their environmental effects and are therefore inadequate. Moreover, the DEIR gives short shrift to the City-Centered Alternative, both understating its environmental benefits and incorrectly claiming that it will not meet the project objectives.

**A. The City-Centered Alternative is Environmentally Superior.**

The DEIR presents both a City-City Centered Alternative, in which growth is directed to areas inside the limits of the County's eight incorporated cities, and Confined-Growth Alternative, which allows more growth in unincorporated communities and hamlets, but limits UDB modification so that the total area inside a given UDB does not grow. The DEIR determines that the Confined-Growth Alternative is environmentally superior, but it can only arrive at this conclusion by underestimating the benefits of the City-Centered Alternative.

The DEIR states clearly that the City-Centered Alternative would reduce the total vehicle miles traveled in the County. DEIR at 7-22. This is mainly common sense—if housing is concentrated in denser areas, closer to jobs and services, people will drive less. What does not make sense, however, is the DEIR's failure to follow through on this logic. If the alternative would reduce vehicle miles, then it would, by definition, reduce emissions from vehicles, importantly including greenhouse gases. The DEIR, however, claims that the alternative would have the same air quality and global warming impacts as the project as proposed. DEIR at 7-6. This conclusion is illogical and unsupportable. The City-Centered Alternative would clearly reduce these impacts.

This aspect of the City-Centered Alternative may have been clearer if the DEIR had performed a more complete analysis of all the alternatives. To fulfill CEQA's requirements, a valid alternatives section would have provided real quantitative analysis comparing the proposed Project's environmental effects with those of particular alternatives capable of reducing the Project's significant unmitigable impacts. See CEQA Guidelines § 15126.6(b); *Laurel Heights*, 47 Cal. 3d at 401-04; *Kings County Farm Bureau*, 221 Cal. App. 3d at 732 (“[I]f there is evidence of one or more potentially significant impacts, the report must contain a *meaningful* analysis of alternatives . . . which would avoid or lessen such impacts.”) (emphasis added).

The only apparent advantage of the Confined Growth Alternative over the City-Centered Alternative, according to the DEIR, is that the Confined Growth Alternative would reduce impacts to open space, agricultural lands, and scenic resources, thanks to its policy on UDB modification. DEIR at 7-34. Under the City-Centered Alternative, however, there would be little call to modify the UDBs of unincorporated communities at all, because growth would be directed to the cities rather than to these areas. Under the City-Centered Alternative, the cities, rather than unincorporated areas, would absorb population growth. This makes it at least equal to the Confined Growth Alternative in terms of those impacts, like the conversion of agricultural land, caused by growth into undeveloped areas. Given this equivalence and the City-Centered Alternative's reduction in vehicle miles traveled, the DEIR should have determined that it was environmentally superior.

This line of comparison suggests a further alternative, one that strengthens the City-Centered Alternative and combines it with the Confined Growth Alternative. Although the DEIR is not entirely clear, it appears that the City-Centered Alternative directs only 80% of growth to the cities, just a slight improvement over the 75% assumed in the Project Description. A reasonable range of alternatives would include an alternative in which General Plan policies would direct even more growth—perhaps as much as 95%—to the cities and at the same time would limit UDB modifications in unincorporated areas. This would allow the communities and hamlets to take on the small degree of growth that does not occur in the cities, without the risk of agricultural and related impacts. This alternative would be truly environmentally superior and must be considered in a revised DEIR.

**B. The DEIR Provides No Valid Reason for Rejecting the City-Centered Alternative.**

Under CEQA, an agency may not approve a proposed project if a feasible alternative exists that would meet the project's objectives and would diminish or avoid its significant environmental impacts. Pub. Resources Code § 21002; *Kings County Farm Bureau*, 221 Cal. App. 3d at 731. The City-Centered Alternative would clearly reduce the General Plan Update's impacts, and there is no suggestion in the DEIR that it is infeasible. The EIR provides only two reasons why this alternative should not be selected: it would not, the DEIR claims, meet the project objectives of allowing unincorporated communities to grow, nor would it promote "reinvestment" in unincorporated communities and hamlets. DEIR at 7-4. Neither of these claims can support the rejection of the City-Centered Growth Alternative. The first is an excessively narrow objective, and therefore not a sufficient reason to reject the alternative, while the second is factually unsupported.

An EIR cannot provide a meaningful comparison between the project and various alternative courses of action unless the project's objectives are defined broadly enough to make such alternatives at least potentially possible. See *Kings County Farm Bureau*, 221 Cal. App. 3d at 735-37; *City of Santee v. County of San Diego* (1989) 214 Cal. App. 3d 1438, 1455. Here, growth in the unincorporated communities is a part of the proposed project. Calling such growth an objective of the General Plan Update means that the DEIR is in effect saying that the objective of the project is to implement the project. Narrowing the project's goals in this way tilts the analysis of alternatives unavoidably—and illegitimately—toward the Update as proposed. Rather than providing the required reasoned, objective analysis, the DEIR has become "nothing more than [a] *post hoc* rationalization[]" for a decision already made. *Laurel Heights Improvement Assn.*, 47 Cal. 3d at 394.

The Council of Cities wishes to be very clear about its position on this issue: Tulare County's unincorporated communities and hamlets absolutely need and deserve the County's support and investment. These areas have tremendous infrastructure needs, and the

Council of Cities is in favor of taking all appropriate countywide action to resolve these problems. The communities and hamlets are not to be abandoned or left to fend for themselves. Concentrating growth outside the cities, however, is not a solution to the County's infrastructure problems, nor should it be an essential goal of this Update. As the DEIR recognizes, confining growth to the cities would produce growth that avoided many of the environmental impacts associated with the proposed General Plan. This alternative therefore should not be taken off the table merely because it offers a growth pattern different from the proposed Plan.

With this in mind, the goal of providing reinvestment for the unincorporated communities and hamlets is clearly an important one. The DEIR is wrong, however, to suggest that the City-Centered Alternative would not meet this objective. Reinvestment is ultimately a question of revenue. City-centered growth would not only provide the County with more revenue than uncontrolled, sprawling growth, it is also likely to cost less in services, leaving more flexibility to support the unincorporated areas.

A recent study looking at the relative costs of different growth patterns found that city-centered growth improved overall revenues. More city-centered growth may concentrate economic activity within municipal boundaries and also allow the regional economy to "draw on usable excess operating capacity in already developed areas as well as efficiencies of service delivery." National Research Council, "Costs of Sprawl Revisited" (1998) at 55-57 (attached as Exhibit 6.). For example, one landmark study of urban growth plans in New Jersey concluded that the plan gave municipalities an annual increase in revenues of some \$112 million, or 2% of operating budgets, mostly by concentrating population and jobs in already developed areas and by creating or expanding centers in newly developing areas. *Id.* at 55.

Real-world experience in Visalia bears this out. Attached as Exhibit 7 is a table illustrating the tax revenues from various development scenarios at the North Plaza Drive Industrial Park. Comparing the first two columns shows the large increase in County revenue brought simply by annexing the land into the City. Even though the County's share of the tax allocation is slightly reduced, the assessed value of the land increases so much that the County is much better off. Concentrating growth within city limits will improve County revenues, and thus increase the services that the County can provide to existing communities in the unincorporated areas.

In addition to improving revenues, city-centered growth can reduce the cost of providing services. Another recent study found that substantial savings are to be had from compact growth across the county in areas such as land conversion, water and sewer infrastructure, road construction, real estate development, and public services costs, with a net benefit to public finances of roughly \$4 billion annually by 2025. Carruthers and Úlfarsson, *Does "Smart Growth" Matter for Public Finances?* U.S. Department of Housing and Urban

Development Working Paper # REP 06-02 (attached as Exhibit 8). These researchers found that nationwide,

if the nation's land use patterns had somehow evolved differently, and development everywhere was 25% more dense, public services would cost, in net, \$3.63 billion less annually; if it were that much less expansive, public services would cost \$6.56 billion less annually. The second scenario suggests that, if development everywhere was 50% more dense, public services would cost \$7.25 billion less annually; if it were that much less expansive, public services would cost \$13.12 billion less annually.

*Id.* § 4.2 at 16. By way of illustration, a hypothetical county of 88,000 residents with per capita expenditures of \$3,200 could expect to save up to \$4.3 million annually if it were 50% more dense. "In sum, the results for these two variables show that, other things being equal, the kind of low-density, spatially extensive development patterns that characterize sprawl cost more to support than the high-density, compact development patterns that the smart growth movement advocates." *Id.* § 4.1 at 15.

In short, the sprawling growth patterns allowed under the General Plan would bring the County less revenue, and would cost more to serve, than the City-Centered Alternative. The DEIR offers no evidence in support of its opposite conclusion, let alone the substantial evidence that CEQA requires. It is clear that the DEIR is simply incorrect when it determines that the City-Centered Alternative would not meet the objective of providing reinvestment for the unincorporated communities. In fact, the City-Centered Alternative is likely to produce more reinvestment for the crucial tasks of providing all of Tulare County's residents with the quality of life they deserve.

## CONCLUSION

For all of these reasons, the Council of Cities strongly urges the County to take no action regarding the General Plan Update and the EIR until both have been extensively revised to resolve the many inadequacies discussed here and in other comment letters. The needed revisions of the EIR will, moreover, require its recirculation for further public comment. After conducting the legally required analysis, the Council of Cities urges the County to proceed with adoption of a plan that contains a land use map and policies that ensure City-centered growth. The Council of Cities and its members remain available to assist the County in any aspect of this planning process.

Very truly yours,

SHUTE, MIHALY & WEINBERGER LLP



Tamara S. Galanter



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Supervisor Allen Ishida  
Supervisor Phil Cox  
Supervisor Steve Worthley  
Supervisor Mike Ennis  
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## EXHIBITS

- Exhibit 1 San Joaquin Valley Air Pollution Control District, "Guide for Assessing and Mitigation Air Quality Impacts"
- Exhibit 2 Excerpt from San Joaquin Valley Air Pollution Control District, "Proposed PM2.5 Plan"



David Bryant  
April 11, 2008  
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- Exhibit 3 California Air Resources Board, "Air Quality and Land Use Handbook"
- Exhibit 4 Map of Tulare County showing urbanized areas and area covered by 1-mile buffer around existing dairies
- Exhibit 5 Lists of pending projects within the Urban Development Boundaries of the Cities of Tulare, Visalia, and Dinuba.
- Exhibit 6 National Research Council, "Costs of Sprawl Revisited"
- Exhibit 7 Table illustrating tax revenue from various development scenarios at North Plaza Drive Industrial Park
- Exhibit 8 Carruthers and Úlfarsson , "Does "Smart Growth" Matter for Public Finances?" U.S. Department of Housing and Urban Development Working Paper # REP 06-02
- Exhibit 9 Excerpt from Bay Area Air Quality Management District, "BAAQMD CEQA Guidelines: Assessing the Air Quality Impacts fo Projects and Plans"



**EXHIBIT 1**



# **GUIDE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACTS**

Prepared by  
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1990 E. Gettysburg Avenue  
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January 10, 2002 revision  
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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)<sup>1</sup>, 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

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<sup>1</sup> 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.*].<sup>2</sup> 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

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<sup>2</sup> 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"<sup>3</sup>.

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 agency<sup>4</sup>. 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 involved<sup>5</sup>. 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.<sup>6</sup> During the EIR process, CEQA provides that the SJVAPCD may comment at three points:

<sup>3</sup> PRC §21002.1

<sup>4</sup> 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.

<sup>5</sup> CCR §15096(a)

<sup>6</sup> 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.<sup>7</sup> 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

<sup>7</sup> 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](http://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*<sup>8</sup>, 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](http://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

<sup>8</sup> 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.** CEQA<sup>9</sup> 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 process<sup>10</sup>.

**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 EIR<sup>11</sup>. 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.

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<sup>9</sup> PRC §21080.3(a)

<sup>10</sup> PRC §21104 and §21153

<sup>11</sup> PRC §21080.4

### 2.3.2 Review after Completing the Environmental Document

CEQA Guidelines requires public review periods for completed proposed Negative Declarations<sup>12</sup> and Draft EIRs<sup>13</sup>. 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 EIRs<sup>14</sup>.

#### **Review of Proposed Negative Declaration or Mitigated Negative Declaration.**

CEQA<sup>15</sup> 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.** CEQA<sup>16</sup> also requires that public notices for draft EIRs be sent to any organization or individual that has so requested. In addition, CEQA Guidelines<sup>17</sup> 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.** CEQA<sup>18</sup> 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.

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<sup>12</sup> CCR §15073

<sup>13</sup> CCR §15087

<sup>14</sup> CCR §15088

<sup>15</sup> PRC §21092

<sup>16</sup> PRC §21092

<sup>17</sup> CCR §15086(a)

<sup>18</sup> 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 Guidelines<sup>19</sup> require that the NOP include, at minimum, a description of the project, project location, and the probable environmental effects of the project. The CEQA Guidelines<sup>20</sup> 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 Guidelines<sup>21</sup> 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.

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<sup>19</sup> CCR §15082

<sup>20</sup> CCR §15082(b)

<sup>21</sup> 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](http://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* (AQGGP). The AQGGP 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 causing<sup>22</sup>. 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 disease<sup>23</sup>.

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

<sup>23</sup> *ibid.*

However, fireplace and wood stove technology and products are readily available that can significantly reduce these emissions. For example, an EPA-Certified<sup>24</sup> 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" Stoves<sup>25</sup> 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 SOx, 6.7 tons of NOx, 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.

<sup>24</sup> 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.

<sup>25</sup> 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 Guidelines<sup>26</sup> 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 law<sup>27</sup>, 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 Guidelines<sup>28</sup>.

**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 requirements<sup>29</sup>. 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])<sup>30</sup> 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

<sup>26</sup> CCR §15064(b)

<sup>27</sup> California Health and Safety Codes (CH&SC) §41100

<sup>28</sup> CCR §15064 (c)

<sup>29</sup> CH&SC §40920

<sup>30</sup> 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) consequences<sup>31</sup>. 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, CEQA<sup>32</sup> 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.

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<sup>31</sup> CCR §15064 (d)

<sup>32</sup> 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.<sup>33</sup> 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.

<sup>33</sup> 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 Regulations<sup>34</sup> 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.

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<sup>34</sup> 40CFR Part 61, Subpart M

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

Pollutant	Tons/yr.
ROG	10
NOx	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 rule<sup>35</sup>. 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

<sup>35</sup> 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"><li>• Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million.</li><li>• Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index greater than 1 for the MEI.</li></ul> |
|---|

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 plan<sup>36</sup> 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.

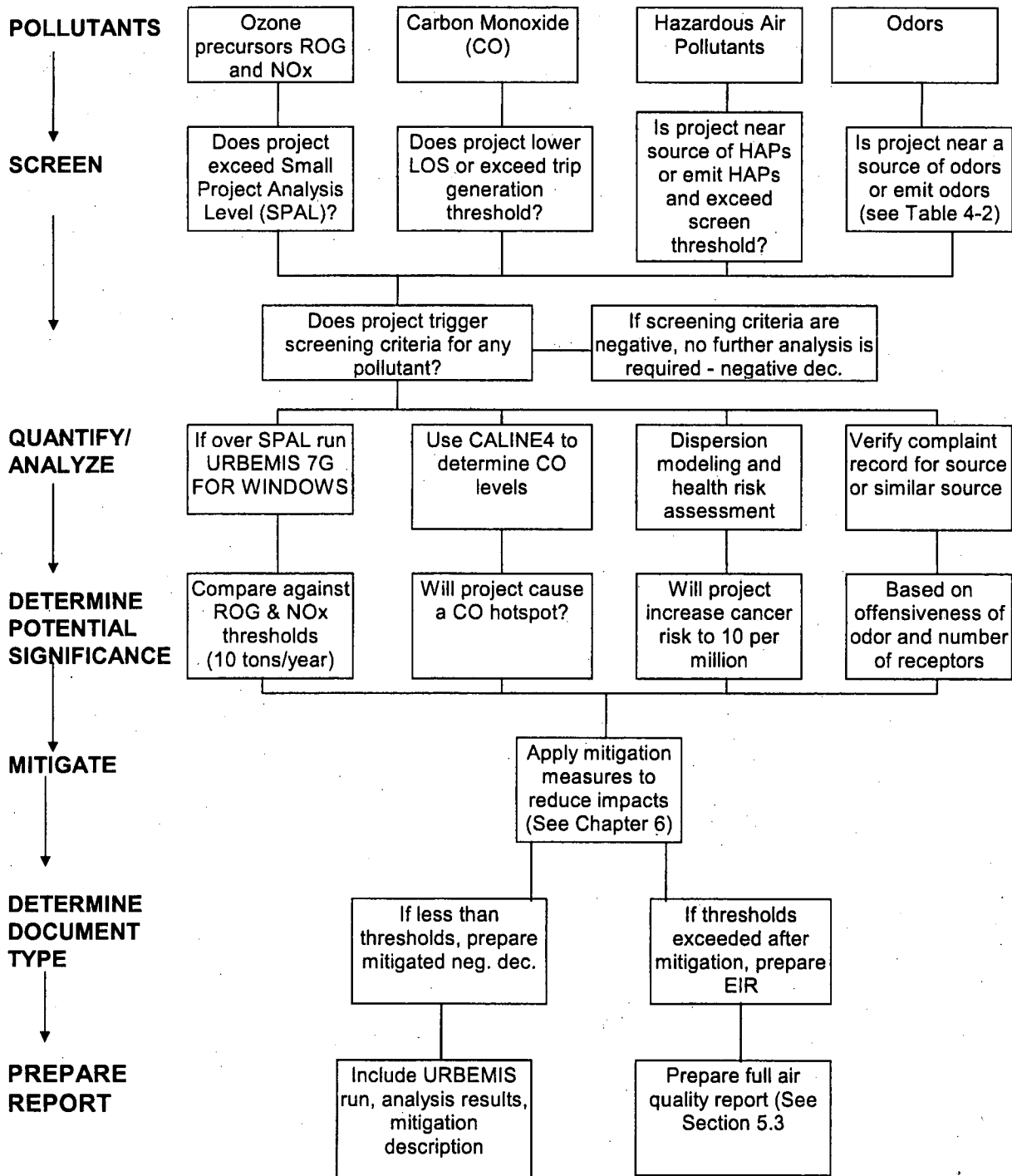
**Components of a Full Air Quality Assessment.** Guidance for completing the various components of a full air quality impact assessment is provided later in this section. The following information and procedures are described:

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

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<sup>36</sup> 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 Windows<sup>37</sup> 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

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<sup>37</sup> 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 Guidelines<sup>38</sup> 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 used<sup>39</sup>. 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.<sup>40</sup> 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 sources<sup>41</sup> 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

<sup>38</sup> CCR §15051(b)(1)

<sup>39</sup> CCR §15124(d)

<sup>40</sup> CCR §15064(i)

<sup>41</sup> 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 Guidelines<sup>42</sup> 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 categories<sup>43</sup>. 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

<sup>42</sup> CCR §15052(a)

<sup>43</sup> 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"> <li>• Verify project qualifies as a SPAL project (Table 5-2, 5-3).</li> <li>• Examine area surrounding project site for sources of toxic air contaminants, hazardous materials, and odors.</li> <li>• If industrial or commercial; verify that project is not a source of toxic air contaminants, hazardous materials, and odors.</li> <li>• Mitigate cumulative impacts with measures appropriate for the site.</li> <li>• If demolition or renovation of existing buildings, contact the District for asbestos requirements.</li> </ul>
Cursory Analysis Level (CAL)	<ul style="list-style-type: none"> <li>• Conduct URBEMIS 7G for Windows<sup>44</sup> model run.</li> <li>• Screen project for CO impact<sup>45</sup>; run CALINE4<sup>46</sup> if required.</li> <li>• 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.</li> <li>• If demolition or renovation of existing buildings, contact the District for asbestos requirements.</li> <li>• Identify mitigation measures and quantify with URBEMIS 7G for Windows when feasible.</li> <li>• If project is identified as potentially significant using the above screening methods, prepare full analysis.</li> </ul>
Full Analysis Level (FAL)	<ul style="list-style-type: none"> <li>• Conduct URBEMIS 7G for Windows model run for projects.</li> <li>• Conduct Direct Travel Impact Model (DTIM)<sup>47</sup> model run for large plans when a transportation model is available.</li> <li>• Screen project for CO impact/run CALINE4 if required</li> <li>• Perform screening analysis for potential toxics, hazardous materials, and odors.</li> <li>• If project is identified as a potentially significant source of toxic or hazardous pollutants, prepare a health risk assessment.</li> </ul>

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

<sup>45</sup> 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>).

<sup>46</sup> 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"> <li>• Prepare an air quality report containing: <ul style="list-style-type: none"> <li>▪ existing air quality conditions;</li> <li>▪ analysis of project air quality impacts; mitigation measures; and</li> <li>▪ results of modeling as technical appendices.</li> </ul> </li> </ul>
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**Table 5-2**  
**Small Project Analysis Level (SPAL) in Vehicle Trips**

Land Use Category	Project Size <sup>48</sup>
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
<b>Housing</b>	
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

<sup>47</sup> 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](http://www.arb.ca.gov/msei/mvei/mvei.htm).

<sup>48</sup> 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
<b>Office</b>	
General Office Building	110,000 ft <sup>2</sup>
Office Park	106,000 ft <sup>2</sup>
Government (Civic Center)	57,000 ft <sup>2</sup>
Government Office Building	23,000 ft <sup>2</sup>
Medical Office Building	52,000 ft <sup>2</sup>

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

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

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

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

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

<b>Land Use Category</b>	<b>Project Size</b>
<b>Institutional</b>	
Hospital	78,000 ft <sup>2</sup>
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 <sup>2</sup>

**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.

<sup>49</sup> 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 Protocol<sup>50</sup> 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 model<sup>51</sup>. 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.

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<sup>50</sup> See footnote 45

<sup>51</sup> 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 project<sup>52</sup>. 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 Deterioration<sup>53</sup> 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

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<sup>52</sup> CCR §15125 (a)

<sup>53</sup> 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 materials<sup>54</sup>. 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 Guide<sup>55</sup> or a report prepared under

<sup>54</sup> 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).

<sup>55</sup> 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.<sup>56</sup>

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 Regulations<sup>57</sup> 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,

<sup>56</sup> South Coast Air Quality Management District, *CEQA Air Quality Handbook*, April 1993.

<sup>57</sup> 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<sub>x</sub>), 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.<sup>58</sup> 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 District<sup>59</sup>. 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.

<sup>58</sup> 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.

<sup>59</sup> 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, Davis<sup>60</sup> 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

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<sup>60</sup> 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 CALINE4<sup>61</sup>.

- **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 Agency<sup>62</sup> 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

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

<sup>62</sup> 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.<sup>63</sup> 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)<sup>64</sup> 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;

<sup>63</sup>Due 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.

<sup>64</sup>HAPs 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 Program<sup>65</sup>. 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

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<sup>65</sup> Air Toxics "Hot Spots" Information and Assessment Act of 1987

projects<sup>66</sup>. 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.

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<sup>66</sup> 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 projects<sup>67</sup>. 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 Consideration<sup>68</sup> 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.

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<sup>67</sup> PRC §21002.1(b)

<sup>68</sup> 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 measures<sup>69</sup>;
- 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.

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<sup>69</sup> 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"> <li>• Adopt air quality element/general plan air quality policies/specific plan policies</li> <li>• Adopt Air Quality Mitigation Fee Program<sup>70</sup></li> <li>• Fund TCM<sup>71</sup> program: transit, bicycle, pedestrian, traffic flow improvements, transportation system management, rideshare, telecommuting, video-conferencing, etc.</li> <li>• Adopt air quality enhancing design guidelines/standards</li> <li>• Designate pedestrian/transit oriented development areas on general plan/specific plan/ planned development land use maps</li> <li>• Adopt ordinance limiting woodburning appliances/fireplace installations<sup>72</sup></li> <li>• Fugitive dust regulation enforcement coordinated with SJVAPCD</li> <li>• Energy efficiency incentive programs</li> <li>• Local alternative fuels programs</li> <li>• Coordinate location of land uses to separate odor generators and sensitive receptors</li> </ul>
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"> <li>• Apply general plan policies, local ordinances, and programs from above to the project site or adopt similar site specific programs</li> <li>• Restrict residential traditional wood fireplaces, install natural gas fireplaces or inserts</li> <li>• Provide pedestrian/transit oriented project design</li> <li>• Contribute to Air Quality Mitigation Fee Fund</li> <li>• Contribute towards TCM implementation programs</li> <li>• Commit to on-site improvements; bikeways, transit infrastructure, pedestrian enhancements</li> <li>• Provide traffic flow improvements for areas impacted by the project</li> </ul>

<sup>70</sup> The City of Stockton and the City of Turlock have adopted air quality mitigation fee programs

<sup>71</sup> 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.

<sup>72</sup> 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.)**

<b>Project</b>	<b>Impact</b>	<b>Mitigation</b>
Tentative maps, site plans, conditional use permits	Cumulative ozone impacts, CO, toxic air emissions, odors	<ul style="list-style-type: none"> <li>• Apply general plan policies and local ordinances and programs from above to the project site</li> <li>• Pedestrian/Transit oriented site design</li> <li>• Provide on-site improvement: bikeways, transit infrastructure, pedestrian enhancements</li> <li>• Contribute to Air Quality Mitigation Fee Fund</li> <li>• Contribute to TCM implementation</li> <li>• Energy conservation measures above and beyond requirements</li> <li>• Require residences to install natural gas fireplaces or inserts in lieu of traditional open-hearth wood fireplaces<sup>73</sup></li> <li>• Pay for fleet vehicle conversions to alternative fuels</li> </ul>

### 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

<sup>73</sup> 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.<sup>74</sup>

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 study<sup>75</sup> 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.

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<sup>74</sup> 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.

<sup>75</sup> 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**

<b>Enhanced Control Measures.</b> - 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):
<ul style="list-style-type: none"><li>• Limit traffic speeds on unpaved roads to 15 mph; and</li><li>• Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.</li></ul>
<b>Additional Control Measures.</b> - 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:
<ul style="list-style-type: none"><li>• Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site;</li><li>• Install wind breaks at windward side(s) of construction areas;</li><li>• Suspend excavation and grading activity when winds exceed 20 mph; and*</li><li>• Limit area subject to excavation, grading, and other construction activity at any one time.</li></ul> <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"> <li>• Use of alternative fueled or catalyst equipped diesel construction equipment</li> <li>• Minimize idling time (e.g., 10 minute maximum)</li> <li>• Limit the hours of operation of heavy duty equipment and/or the amount of equipment in use</li> <li>• Replace fossil-fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set)</li> <li>• 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</li> <li>• Implement activity management (e.g. rescheduling activities to reduce short-term impacts)</li> </ul>

### 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 <sup>76</sup>	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"> <li>• Type of transit service (heavy rail, light rail, bus) - rail attracts more riders</li> <li>• Distance from home to transit station and transit station to work - ridership 2-4 times higher within ½ mile</li> <li>• Density of land use - higher densities provide greater ridership</li> <li>• Mix of uses at either end of transit trip - mixed use increases transit use</li> <li>• Pedestrian accessibility to transit system</li> </ul>

**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"> <li>• Distance to employment centers - long commute attracts park and ride users and telecommuters</li> <li>• Degree of congestion on routes to employment centers</li> <li>• Availability of high occupant vehicle (HOV) lanes, express transit, rail, rideshare incentives</li> <li>• Type of employers - information based jobs have higher telecommuting potential</li> </ul>

<sup>76</sup> 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"> <li>• Degree of sidewalk/path coverage within walking distance</li> <li>• Mixture of uses to attract pedestrians within walking distance</li> <li>• Pedestrian circulation provides direct access (streets interconnected/pedestrian shortcuts)</li> <li>• Degree of street tree coverage along most used routes</li> <li>• Street system designed to enhance pedestrian safety (traffic calming, signalization, separation from traffic, limited curb cuts<sup>77</sup>, etc.)</li> <li>• Pedestrian routes provide safety from crime (eyes on the street, high activity levels, lack of gangs)</li> <li>• Walking routes to important destinations provide visual interest for pedestrians</li> </ul>

<sup>77</sup> 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"> <li>Degree area within bicycling distance (5 miles max.) is served by interconnected bikeways</li> <li>Degree area within bicycling distance has wide paved shoulders and limited curb cuts<sup>78</sup></li> <li>Speed limits on routes to frequent destinations - low speed limits enhance cycling</li> <li>Presence of college or university within cycling distance</li> <li>Mixture of uses that attract bicyclists within cycling distance</li> <li>Availability of bicycle parking within cycling distance - communities with bike parking ordinance tend to have high availability</li> </ul>

**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"> <li>Employer provides support measures such as carpool/vanpool subsidies, preferential parking, guaranteed ride home program, etc.</li> <li>Coordinate with regional ridesharing organizations, e.g., Commute Connection, Central Valley Ridesharing, Kern Rideshare<sup>79</sup></li> <li>Multiple smaller worksites coordinate programs</li> <li>Limited parking supply and/or implementation of parking fees or parking cash-out</li> </ul>

<sup>78</sup> See note previous page

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

**Table 6-6 (b)**  
**Services Operational Mitigation Measures**

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



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

**Table 6-6 (d)**  
**Parking Operational Mitigation Measures**

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

**Table 6-6 (e)**  
**Transit Operational Mitigation Measures**

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

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

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

### 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 Guide<sup>80</sup>.

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.

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

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

<b>Emission Source</b>	<b>Mitigation</b>
Residential Water Heaters	<ul style="list-style-type: none"> <li>• Use solar or low-emission water heaters (beyond Rule 4902)</li> <li>• Use central water heaters</li> </ul>
Residential Energy Efficiency	<ul style="list-style-type: none"> <li>• Orient buildings to take advantage of solar heating and natural cooling and use passive solar designs</li> <li>• Increase wall and attic insulation beyond Title 24 requirements</li> </ul>
Commercial Water Heaters	<ul style="list-style-type: none"> <li>• Use solar or low-emission water heaters</li> <li>• Use central water heating systems</li> </ul>
Commercial Energy Efficiency	<ul style="list-style-type: none"> <li>• Orient buildings to take advantage of solar heating and natural cooling and use passive solar designs</li> <li>• Increase wall and attic insulation beyond Title 24 requirements</li> </ul>
Industrial Heating	<ul style="list-style-type: none"> <li>• Orient buildings to take advantage of solar heating and natural cooling and use passive solar designs</li> </ul>
Landscape Maintenance	<ul style="list-style-type: none"> <li>• Provide electric maintenance equipment</li> </ul>
Residential Heating	<ul style="list-style-type: none"> <li>• 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)</li> </ul>

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 approval<sup>81</sup>. 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

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<sup>81</sup> 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 state<sup>82</sup>".

**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

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<sup>82</sup> 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 effects<sup>83</sup>.

**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 agencies<sup>84</sup>.

**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

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<sup>83</sup> CCR §15362

<sup>84</sup> 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.

**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 (209) 557-6400  
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Central Region Office – Fresno (559) 230-6000  
1990 E. Gettysburg Avenue FAX (559) 230-6061  
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Southern Region Office – Bakersfield (661) 326-6900  
2700 "M" St., Suite 275 FAX (661) 326-6975  
Bakersfield, CA 93301

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

**PLANNING DIVISION**

**Air Quality Elements/General Plan** (559) 230-5800

**CEQA Commenting/Impact Assessment**

- Northern Region (*Merced, Stanislaus, and San Joaquin Counties*) (209) 557-6470
- Central Region (*Fresno and Madera Counties*) (559) 230-5800
- Southern Region (*Tulare and Kings County and a portion of Kern County*) (661) 326-6980

**Public Information/Education** (559) 230-5850

**PERMIT SERVICES DIVISION****Small Business Assistance**

- Northern Region (*Merced, Stanislaus, and San Joaquin Counties*) (209) 557-6446
- Central Region (*Fresno, Kings, and Madera Counties*) (559) 230-5888
- Southern Region (*Tulare County and a portion of Kern County*) (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 (*Merced, Stanislaus, and San Joaquin Counties*) (209) 557-6400
- Central Region (*Fresno, Kings, and Madera Counties*) (559) 230-5950
- Southern Region (*Tulare County and a portion of Kern County*) (661) 326-6900



**EXHIBIT 2**



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## **Executive Summary**

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## **Executive Summary**

In 1997, the U.S. Environmental Protection Agency (EPA) set two PM<sub>2.5</sub> standards: a 24-hour standard to protect against short-term health impacts, and a 12-month (annual) standard to protect against longer-term impacts. The San Joaquin Valley complied with the 24-hour standard, based on data from 2004 through 2006. In 2006, EPA revised the 24-hour standard to a lower level. Additional formal rulemaking by EPA is required before the states can submit plans for the new 2006 PM<sub>2.5</sub> standard. Based on informal discussions with EPA, it is estimated that attainment plans for this new standard may be required by 2012 or 2013. Consequently, this *2008 PM<sub>2.5</sub> Plan* focuses primarily on the strategy to attain the 1997 annual standard. Nonetheless, the measures proposed in this plan will also provide for progress towards the more stringent 2006 PM<sub>2.5</sub> standards.

The *2008 PM<sub>2.5</sub> Plan* builds upon the comprehensive strategy adopted in the *2007 Ozone Plan* to bring the Valley into attainment of the 1997 National Ambient Air Quality Standards (NAAQS) for PM<sub>2.5</sub> (particulate matter that is 2.5 microns or less in diameter). PM<sub>2.5</sub> can be directly emitted into the atmosphere or can form in the atmosphere through chemical reactions among precursors. EPA has identified nitrogen oxides (NO<sub>x</sub>) and sulfur dioxide (SO<sub>2</sub>) as precursors that must be addressed in air quality plans for the 1997 PM<sub>2.5</sub> standards. The *2008 PM<sub>2.5</sub> Plan* is a continuation of the San Joaquin Valley Unified Air Pollution Control District's (District) strategy to improve the air quality in the San Joaquin Valley.

### ***Progress from ozone and PM<sub>10</sub> Attainment Plans***

The District's adopted ozone and PM<sub>10</sub> plans are already providing benefits for PM<sub>2.5</sub> levels. Under the control strategy put forth in the *2003 PM<sub>10</sub> Plan* and amendments, and again verified by the *2006 PM<sub>10</sub> Plan*, the Valley has reached attainment of the federal PM<sub>10</sub> standards ahead of schedule. The *SB656 Report*, prepared and adopted by the District to meet state requirements in 2006 (Health and Safety Code (H&SC) Section 39614), confirmed that the District's PM<sub>10</sub> and precursor strategy is a benchmark for other air districts in California. In September 2007, the District adopted the *2007 PM<sub>10</sub> Maintenance Plan and Request for Redesignation* as required for EPA to officially redesignate the San Joaquin Valley to attainment of the PM<sub>10</sub> standards.

As a public health agency, the District's mission is to improve the health and quality of life for all Valley residents through efficient, effective, and entrepreneurial air quality-management strategies. In recent years, the District has played a leadership role in devising and implementing effective measures for controlling emissions from stationary and indirect sources of air pollution. Today, the District's air quality management program is one of the strongest in the state.

PM<sub>2.5</sub> levels have been decreasing since PM<sub>2.5</sub> monitoring began in 1999 through the District's emissions controls. The Valley's success with PM<sub>10</sub> gives us confidence that

our control strategies will continue to be successful in the future for PM<sub>2.5</sub>. Analysis of PM<sub>2.5</sub> monitoring data for 2004 to 2006 shows that the Valley attained the 1997 24-hour PM<sub>2.5</sub> NAAQS of 65 µg/m<sup>3</sup>.

The recently-adopted 2007 Ozone Plan contains a comprehensive and exhaustive list of regulatory and incentive-based measures to reduce emissions of ozone precursors throughout the Valley in the coming years. This PM<sub>2.5</sub> Plan analyzes these measures to project PM<sub>2.5</sub> improvement. District staff also recommends new controls for further reductions in PM<sub>2.5</sub> and its precursors.

### ***Expeditious Attainment***

The Clean Air Act requires all states to attain the 1997 PM<sub>2.5</sub> standards as expeditiously as practicable beginning in 2010, but by no later than April 5, 2015. States must identify their attainment dates based on the rate of reductions from their control strategies and the severity of the PM<sub>2.5</sub> problem. Modeling must be used to verify that the control strategy is as expeditious as practicable.

The District is committed to expeditious attainment of the PM<sub>2.5</sub> standards. Thorough analysis of modeling results available to date and control measures show that the San Joaquin Valley PM<sub>2.5</sub> nonattainment area can attain the annual PM<sub>2.5</sub> NAAQS in 2014.

### ***What does this plan do?***

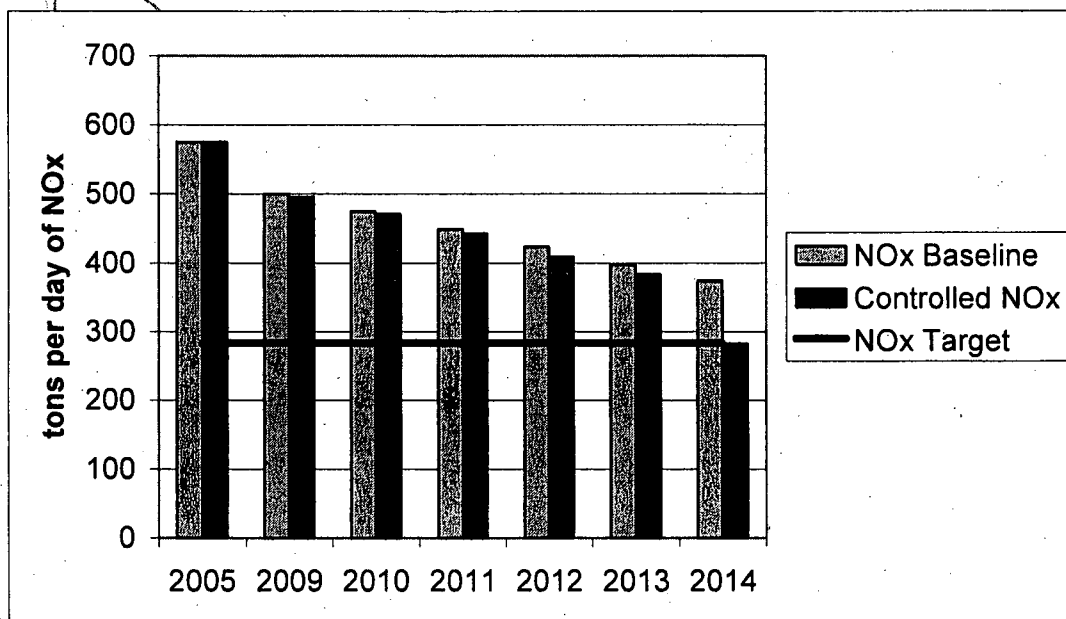
This plan contains a comprehensive and exhaustive list of strict regulatory and incentive-based measures to reduce directly emitted PM<sub>2.5</sub> and precursor emissions throughout the Valley. As the District continues to tighten regulations for sources under its jurisdiction, state and federal agencies need to also reduce emissions from mobile sources, which are beyond the District's direct jurisdiction.

Based on the District's and ARB's analysis (shown in Figure ES-1), it appears that the Valley can attain the 1997 PM<sub>2.5</sub> standard. The "Baseline NO<sub>x</sub>" columns provide a baseline inventory (Table B-2) that includes the benefits of rules adopted by the District and ARB through December 2006 as well as adjustments for routine emissions inventory methodology reviews. The "Controlled NO<sub>x</sub>" columns then account for the proposed PM<sub>2.5</sub> Plan control strategy (including District control measures and ARB reductions). The "NO<sub>x</sub> Target" line represents the basin-wide average NO<sub>x</sub> goal, the NO<sub>x</sub> emissions level at which the entire Valley will be in attainment of the annual PM<sub>2.5</sub> standard.

Figure ES-1 shows that, under the District's current analysis, the Valley can attain the annual PM<sub>2.5</sub> standard in 2014 with the PM<sub>2.5</sub> Plan's NO<sub>x</sub> strategy. Though modeling shows that NO<sub>x</sub> is the dominant pollutant for reducing the San Joaquin Valley's PM<sub>2.5</sub> concentrations, direct PM<sub>2.5</sub> reductions and SO<sub>2</sub> reductions also provide benefits to ambient PM<sub>2.5</sub> levels. The SO<sub>2</sub> reductions and PM<sub>2.5</sub> reductions proposed in this plan

and in ARB's strategy increase the District's confidence in PM<sub>2.5</sub> attainment in 2014. Furthermore, these SO<sub>2</sub> and direct PM<sub>2.5</sub> reductions can help the Valley reach attainment earlier and make further progress towards meeting the 2006 PM<sub>2.5</sub> standards. ARB modeling (see Chapter 3) confirms the attainment outlook.

**Figure ES-1 Annual Average NO<sub>x</sub> Emissions and Attainment Target**



The 2008 PM<sub>2.5</sub> Plan is designed to meet federal requirements for PM<sub>2.5</sub> plans (see Chapter 2). By bringing the Valley into attainment of the PM<sub>2.5</sub> standard as expeditiously as practicable, this plan will reduce the Valley's PM<sub>2.5</sub>-related health impacts and health-related costs. Aligning PM<sub>2.5</sub> and ozone efforts will ensure that resources are used efficiently and effectively. The progress made in this plan to bring the Valley into attainment of the federal 1997 PM<sub>2.5</sub> standards will also contribute to progress towards the 2006 PM<sub>2.5</sub> standards as well as 8-hour ozone standards.

**DRAFT**

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**EXHIBIT 3**



# **AIR QUALITY AND LAND USE HANDBOOK: A COMMUNITY HEALTH PERSPECTIVE**



**April 2005**

**California Environmental Protection Agency  
California Air Resources Board**



## Air Agency Contacts

### Federal-

**U.S. EPA, Region 9**  
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### -State-

**California Air Resources Board**  
 Phone: (916) 322-2990 (public info)  
 (800) 363-7664 (public info)  
 (800) 952-5588 (complaints)  
 (866)-397-5462 (env. justice)  
 Website: [www.arb.ca.gov](http://www.arb.ca.gov)  
 Email: [helpline@arb.ca.gov](mailto:helpline@arb.ca.gov)

### -Local-

**Amador County APCD**  
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**Antelope Valley AQMD**  
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 Website: [www.avaqmd.ca.gov](http://www.avaqmd.ca.gov)  
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 Complaint Line: (800) 334-6367  
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**Monterey Bay Unified APCD**  
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**Northern Sierra AQMD**  
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**Northern Sonoma County APCD**  
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**San Diego County APCD**  
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**San Joaquin Valley APCD**  
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 (800) 281-7003  
 (San Joaquin, Stanislaus, Merced)  
 (800) 870-1037  
 (Madera, Fresno, Kings)  
 (800) 926-5550  
 (Tulare and Valley portion of Kern)  
 Website: [www.valleyair.org](http://www.valleyair.org)  
 E-Mail: [sjvapcd@valleyair.org](mailto:sjvapcd@valleyair.org)

**San Luis Obispo County APCD**  
 Phone: (805) 781-5912  
 Website: [www.slcleanair.org](http://www.slcleanair.org)  
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**Santa Barbara County APCD**  
 Phone: (805) 961-8800  
 Website: [www.sbcapcd.org](http://www.sbcapcd.org)  
 Email us: [apcd@sbcapcd.org](mailto:apcd@sbcapcd.org)

**Shasta County AQMD**  
 Phone: (530) 225-5789  
 Website: [www.co.shasta.ca.us/Departments/ResourceMgmt/drm/agmain.htm](http://www.co.shasta.ca.us/Departments/ResourceMgmt/drm/agmain.htm)  
 E-Mail: [scdrn@snowcrest.net](mailto:scdrn@snowcrest.net)

**Siskiyou County APCD**  
 Phone: (530) 841-4029  
 E-Mail: [ebeck@siskiyou.ca.us](mailto:ebeck@siskiyou.ca.us)

**South Coast AQMD**  
 Phone: (909) 396-2000  
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 Website: [www.aqmd.gov](http://www.aqmd.gov)  
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**Tuolumne County APCD**  
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**Ventura County APCD**  
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 Complaint Line: (805) 654-2797  
 Website: [www.vcapcd.org](http://www.vcapcd.org)  
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**Yolo-Solano AQMD**  
 Phone: (530) 757-3650  
 Website: [www.ysaqmd.org](http://www.ysaqmd.org)  
 Email: [administration@ysaqmd.org](mailto:administration@ysaqmd.org)



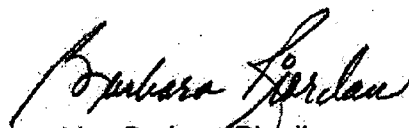
## ***To My Local Government Colleagues....***

I am pleased to introduce this informational guide to air quality and land use issues focused on community health. As a former county supervisor, I know from experience the complexity of local land use decisions. There are multiple factors to consider and balance. This document provides important public health information that we hope will be considered along with housing needs, economic development priorities, and other quality of life issues.

An important focus of this document is prevention. We hope the air quality information provided will help inform decision-makers about the benefits of avoiding certain siting situations. The overarching goal is to avoid placing people in harm's way. Recent studies have shown that public exposure to air pollution can be substantially elevated near freeways and certain other facilities. What is encouraging is that the health risk is greatly reduced with distance. For that reason, we have provided some general recommendations aimed at keeping appropriate distances between sources of air pollution and land uses such as residences.

Land use decisions are a local government responsibility. The Air Resources Board's role is advisory and these recommendations do not establish regulatory standards of any kind. However, we hope that the information in this document will be seriously considered by local elected officials and land use agencies. We also hope that this document will promote enhanced communication between land use agencies and local air pollution control agencies. We developed this document in close coordination with the California Air Pollution Control Officers Association with that goal in mind.

I hope you find this document both informative and useful.



Mrs. Barbara Riordan  
Interim Chairman  
California Air Resources Board

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- Appendix B** Land Use-Based Reference Tools To Evaluate New Projects For Potential Air Pollution Impacts
- Appendix C** ARB And Local Air District Information And Tools Concerning Cumulative Air Pollution Impacts
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- Appendix G** Glossary Of Key Air Pollution Terms

### **Acknowledgments**

The ARB staff would like to acknowledge the exceptional contributions made to this document by members of the ARB Environmental Justice Stakeholders Group. Since 2001, ARB staff has consistently relied on this group to provide critical and constructive input on implementing the specifics of ARB's environmental justice policies and actions. The Stakeholders Group is convened by the ARB, and comprised of representatives from local land use and air agencies, community interest groups, environmental justice organizations, academia, and business. Their assistance and suggestions throughout the development of this Handbook have been invaluable.

## Executive Summary

The Air Resources Board's (ARB) primary goal in developing this document is to provide information that will help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution. Recent air pollution studies have shown an association between respiratory and other non-cancer health effects and proximity to high traffic roadways. Other studies have shown that diesel exhaust and other cancer-causing chemicals emitted from cars and trucks are responsible for much of the overall cancer risk from airborne toxics in California. Also, ARB community health risk assessments and regulatory programs have produced important air quality information about certain types of facilities that should be considered when siting new residences, schools, day care centers, playgrounds, and medical facilities (i.e., sensitive land uses). Sensitive land uses deserve special attention because children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the non-cancer effects of air pollution. There is also substantial evidence that children are more sensitive to cancer-causing chemicals.

Focusing attention on these siting situations is an important preventative action. ARB and local air districts have comprehensive efforts underway to address new and existing air pollution sources under their respective jurisdictions. The issue of siting is a local government function. As more data on the connection between proximity and health risk from air pollution become available, it is essential that air agencies share what we know with land use agencies. We hope this document will serve that purpose.

The first section provides ARB recommendations regarding the siting of new sensitive land uses near freeways, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and gasoline dispensing facilities. This list consists of the air pollution sources that we have evaluated from the standpoint of the proximity issue. It is based on available information and reflects ARB's primary areas of jurisdiction – mobile sources and toxic air contaminants. A key air pollutant common to many of these sources is particulate matter from diesel engines. Diesel particulate matter (diesel PM) is a carcinogen identified by ARB as a toxic air contaminant and contributes to particulate pollution statewide.

Reducing diesel particulate emissions is one of ARB's highest public health priorities and the focus of a comprehensive statewide control program that is reducing diesel PM emissions each year. ARB's long-term goal is to reduce diesel PM emissions 85% by 2020. However, cleaning up diesel engines will take time as new engine standards phase in and programs to accelerate fleet turnover or retrofit existing engines are implemented. Also, these efforts are reducing diesel particulate emissions on a statewide basis, but do not yet capture every site where diesel vehicles and engines may congregate. Because living or going to school too close to such air pollution sources may increase both cancer and non-cancer health risks, we are recommending that proximity be considered in the siting of new sensitive land uses.

There are also other key toxic air contaminants associated with specific types of facilities. Most of these are subject to stringent state and local air district regulations. However, what we know today indicates that keeping new homes and other sensitive land uses from siting too close to such facilities would provide additional health protection. Chrome platers are a prime example of facilities that should not be located near vulnerable communities because of the cancer health risks from exposure to the toxic material used during their operations.

In addition to source specific recommendations, we also encourage land use agencies to use their planning processes to ensure the appropriate separation of industrial facilities and sensitive land uses. While we provide some suggestions, how to best achieve that goal is a local issue. In the development of these guidelines, we received valuable input from local government about the spectrum of issues that must be considered in the land use planning process. This includes addressing housing and transportation needs, the benefits of urban infill, community economic development priorities, and other quality of life issues. All of these factors are important considerations. The recommendations in the Handbook need to be balanced with other State and local policies.

Our purpose with this document is to highlight the potential health impacts associated with proximity to air pollution sources so planners explicitly consider this issue in planning processes. We believe that with careful evaluation, infill development, mixed use, higher density, transit-oriented development, and other concepts that benefit regional air quality can be compatible with protecting the health of individuals at the neighborhood level. One suggestion for achieving this goal is more communication between air agencies and land use planners. Local air districts are an important resource that should be consulted regarding sources of air pollution in their jurisdictions. ARB staff will also continue to provide updated technical information as it becomes available.

Our recommendations are as specific as possible given the nature of the available data. In some cases, like refineries, we suggest that the siting of new sensitive land uses should be avoided immediately downwind. However, we leave definition of the size of this area to local agencies based on facility specific considerations. Also, project design that would reduce air pollution exposure may be part of the picture and we encourage consultation with air agencies on this subject.

In developing the recommendations, our first consideration was the adequacy of the data available for an air pollution source category. Using that data, we assessed whether we could reasonably characterize the relative exposure and health risk from a proximity standpoint. That screening provided the list of air pollution sources that we were able to address with specific recommendations. We also considered the practical implications of making hard and fast recommendations where the potential impact area is large, emissions will be reduced with time, and air agencies are in the process of looking at options for additional emission control. In the end, we tailored our recommendations to minimize the highest exposures for each source category independently. Due to the large variability in relative risk in the source categories, we chose not to apply

a uniform, quantified risk threshold as is typically done in air quality permitting programs. Instead, because these guidelines are not regulatory or binding on local agencies, we took a more qualitative approach in developing the distance-based recommendations.

Where possible, we recommend a minimum separation between a new sensitive land use and known air pollution risks. In other cases, we acknowledge that the existing health risk is too high in a relatively large area, that air agencies are working to reduce that risk, and that in the meantime, we recommend keeping new sensitive land uses out of the highest exposure areas. However, it is critical to note that our implied identification of the high exposure areas for these sources does not mean that the risk in the remaining impact area is insignificant. Rather, we hope this document will bring further attention to the potential health risk throughout the impact area and help garner support for our ongoing efforts to reduce health risk associated with air pollution sources. Areas downwind of major ports, rail yards, and other inter-modal transportation facilities are prime examples.

We developed these recommendations as a means to share important public health information. The underlying data are publicly available and referenced in this document. We also describe our rationale and the factors considered in developing each recommendation, including data limitations and uncertainties. These recommendations are advisory and should not be interpreted as defined "buffer zones." We recognize the opportunity for more detailed site-specific analyses always exists, and that there is no "one size fits all" solution to land use planning.

As California continues to grow, we collectively have the opportunity to use all the information at hand to avoid siting scenarios that may pose a health risk. As part of ARB's focus on communities and children's health, we encourage land use agencies to apply these recommendations and work more closely with air agencies. We also hope that this document will help educate a wider audience about the value of preventative action to reduce environmental exposures to air pollution.

## **1. ARB Recommendations on Siting New Sensitive Land Uses**

Protecting California's communities and our children from the health effects of air pollution is one of the most fundamental goals of state and local air pollution control programs. Our focus on children reflects their special vulnerability to the health impacts of air pollution. Other vulnerable populations include the elderly, pregnant women, and those with serious health problems affected by air pollution. With this document, we hope to more effectively engage local land use agencies as partners in our efforts to reduce health risk from air pollution in all California communities.

Later sections emphasize the need to strengthen the connection between air quality and land use in both planning and permitting processes. Because the siting process for many, but not all air pollution sources involves permitting by local air districts, there is an opportunity for interagency coordination where the proposed location might pose a problem. To enhance the evaluation process from a land use perspective, section 4 includes recommended project related questions to help screen for potential proximity related issues.

Unlike industrial and other stationary sources of air pollution, the siting of new homes or day care centers does not require an air quality permit. Because these situations fall outside the air quality permitting process, it is especially important that land use agencies be aware of potential air pollution impacts.

The following recommendations address the issue of siting "sensitive land uses" near specific sources of air pollution; namely:

- High traffic freeways and roads
- Distribution centers
- Rail yards
- Ports
- Refineries
- Chrome plating facilities
- Dry cleaners
- Large gas dispensing facilities

The recommendations for each category include a summary of key information and guidance on what to avoid from a public health perspective.



*Sensitive individuals refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses where sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses).*

We are characterizing sensitive land uses as simply as we can by using the example of residences, schools, day care centers, playgrounds, and medical facilities. However, a variety of facilities are encompassed. For example, residences can include houses, apartments, and senior living complexes. Medical facilities can include hospitals, convalescent homes, and health clinics. Playgrounds could be play areas associated with parks or community centers.

In developing these recommendations, ARB first considered the adequacy of the data available for each air pollution source category. We assessed whether we could generally characterize the relative exposure and health risk from a proximity standpoint. The documented non-cancer health risks include triggering of asthma attacks, heart attacks, and increases in daily mortality and hospitalization for heart and respiratory diseases. These health impacts are well documented in epidemiological studies, but less easy to quantify from a particular air pollution source. Therefore, the cancer health impacts are used in this document to provide a picture of relative risk. This screening process provided the list of source categories we were able to address with specific recommendations. In evaluating the available information, we also considered the practical implications of making hard and fast recommendations where the potential impact area is large, emissions will be reduced with time, and air agencies are in the process of looking at options for additional emission control. Due to the large variability in relative risk between the source categories, we chose not to apply a uniform, quantified risk threshold as is typically done in regulatory programs. Therefore, in the end, we tailored our recommendations to minimize the highest exposures for each source category independently. Additionally, because this guidance is not regulatory or binding on local agencies, we took a more qualitative approach to developing distance based recommendations.

Where possible, we recommend a minimum separation between new sensitive land uses and existing sources. However, this is not always possible, particularly where there is an elevated health risk over large geographical areas. Areas downwind of ports and rail yards are prime examples. In such cases, we recommend doing everything possible to avoid locating sensitive receptors within the highest risk zones. Concurrently, air agencies and others will be working to reduce the overall risk through controls and measures within their scope of authority.

The recommendations were developed from the standpoint of siting new sensitive land uses. Project-specific data for new and existing air pollution sources are available as part of the air quality permitting process. Where such information is available, it should be used. Our recommendations are designed to fill a gap where information about existing facilities may not be readily available. These recommendations are only guidelines and are not designed to substitute for more specific information if it exists.

A summary of our recommendations is shown in Table 1-1. The basis and references<sup>1</sup> supporting each of these recommendations, including health studies, air quality modeling and monitoring studies is discussed below beginning with freeways and summarized in Table 1-2. As new information becomes available, it will be included on ARB's community health web page.

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<sup>1</sup>Detailed information on these references are available on ARB's website at: <http://www.ARB.ca.gov/ch/landuse.htm>.

**Table 1-1**

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

<b>Source Category</b>	<b>Advisory Recommendations</b>
Freeways and High-Traffic Roads	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.</li> </ul>
Distribution Centers	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week).</li> <li>• Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.</li> </ul>
Rail Yards	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard.</li> <li>• Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.</li> </ul>
Ports	<ul style="list-style-type: none"> <li>• Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.</li> </ul>
Refineries	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.</li> </ul>
Chrome Platers	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.</li> </ul>
Dry Cleaners Using Perchloro-ethylene	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district.</li> <li>• Do not site new sensitive land uses in the same building with perc dry cleaning operations.</li> </ul>
Gasoline Dispensing Facilities	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.</li> </ul>

**\*Notes:**

- These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

- Recommendations are based primarily on data showing that the air pollution exposures addressed here (i.e., localized) can be reduced as much as 80% with the recommended separation.
- The relative risk for these categories varies greatly (see Table 1-2). To determine the actual risk near a particular facility, a site-specific analysis would be required. Risk from diesel PM will decrease over time as cleaner technology phases in.
- These recommendations are designed to fill a gap where information about existing facilities may not be readily available and are not designed to substitute for more specific information if it exists. The recommended distances take into account other factors in addition to available health risk data (see individual category descriptions).
- Site-specific project design improvements may help reduce air pollution exposures and should also be considered when siting new sensitive land uses.
- This table does not imply that mixed residential and commercial development in general is incompatible. Rather it focuses on known problems like dry cleaners using perchloroethylene that can be addressed with reasonable preventative actions.
- A summary of the basis for the distance recommendations can be found in Table 1-2.

Table 1-2

## Summary of Basis for Advisory Recommendations

Source Category	Range of Relative Cancer Risk <sup>1,2</sup>	Summary of Basis for Advisory Recommendations
Freeways and High-Traffic Roads	300 – 1,700	<ul style="list-style-type: none"> <li>In traffic-related studies, the additional non-cancer health risk attributable to proximity was seen within 1,000 feet and was strongest within 300 feet. California freeway studies show about a 70% drop off in particulate pollution levels at 500 feet.</li> </ul>
Distribution Centers <sup>3</sup>	Up to 500	<ul style="list-style-type: none"> <li>Because ARB regulations will restrict truck idling at distribution centers, transport refrigeration unit (TRU) operations are the largest onsite diesel PM emission source followed by truck travel in and out of distribution centers.</li> <li>Based on ARB and South Coast District emissions and modeling analyses, we estimate an 80 percent drop-off in pollutant concentrations at approximately 1,000 feet from a distribution center.</li> </ul>
Rail Yards	Up to 500	<ul style="list-style-type: none"> <li>The air quality modeling conducted for the Roseville Rail Yard Study predicted the highest impact is within 1,000 feet of the Yard, and is associated with service and maintenance activities. The next highest impact is between a half to one mile of the Yard, depending on wind direction and intensity.</li> </ul>
Ports	Studies underway	<ul style="list-style-type: none"> <li>ARB will evaluate the impacts of ports and develop a new comprehensive plan that will describe the steps needed to reduce public health impacts from port and rail activities in California. In the interim, a general advisory is appropriate based on the magnitude of diesel PM emissions associated with ports.</li> </ul>
Refineries	Under 10	<ul style="list-style-type: none"> <li>Risk assessments conducted at California refineries show risks from air toxics to be under 10 chances of cancer per million.<sup>4</sup></li> <li>Distance recommendations were based on the amount and potentially hazardous nature of many of the pollutants released as part of the refinery process, particularly during non-routine emissions releases.</li> </ul>
Chrome Platers	10-100	<ul style="list-style-type: none"> <li>ARB modeling and monitoring studies show localized risk of hexavalent chromium diminishing significantly at 300 feet. There are data limitations in both the modeling and monitoring studies. These include variability of plating activities and uncertainty of emissions such as fugitive dust. Hexavalent chromium is one of the most potent toxic air contaminants. Considering these factors, a distance of 1,000 feet was used as a precautionary measure.</li> </ul>
Dry Cleaners Using Perchloroethylene (perc)	15-150	<ul style="list-style-type: none"> <li>Local air district studies indicate that individual cancer risk can be reduced by as much as 75 percent by establishing a 300 foot separation between a sensitive land use and a one-machine perc dry cleaning operation. For larger operations (2 machines or more), a separation of 500 feet can reduce risk by over 85 percent.</li> </ul>

Source Category	Range of Relative Cancer Risk <sup>1,2</sup>	Summary of Basis for Advisory Recommendations
Gasoline Dispensing Facilities (GDF) <sup>5</sup>	<p>Typical GDF: Less than 10</p> <p>Large GDF: Between Less than 10 and 120</p>	<ul style="list-style-type: none"> <li>Based on the CAPCOA Gasoline Service Station Industry-wide Risk Assessment Guidelines, most typical GDFs (less than 3.6 million gallons per year) have a risk of less than 10 at 50 feet under urban air dispersion conditions. Over the last few years, there has been a growing number of extremely large GDFs with sales over 3.6 and as high as 19 million gallons per year. Under rural air dispersion conditions, these large GDFs can pose a larger risk at a greater distance.</li> </ul>

<sup>1</sup>For cancer health effects, risk is expressed as an estimate of the increased chances of getting cancer due to facility emissions over a 70-year lifetime. This increase in risk is expressed as chances in a million (e.g., 10 chances in a million).

<sup>2</sup>The estimated cancer risks are a function of the proximity to the specific category and were calculated independent of the regional health risk from air pollution. For example, the estimated regional cancer risk from air toxics in the Los Angeles region (South Coast Air Basin) is approximately 1,000 in a million.

<sup>3</sup>Analysis based on refrigerator trucks.

<sup>4</sup>Although risk assessments performed by refineries indicate they represent a low cancer risk, there is limited data on non-cancer effects of pollutants that are emitted from these facilities. Refineries are also a source of non-routine emissions and odors.

<sup>5</sup>A typical GDF in California dispenses under 3.6 million gallons of gasoline per year. The cancer risk for this size facility is likely to be less than 10 in a million at the fence line under urban air dispersion conditions.

A large GDF has fuel throughputs that can range from 3.6 to 19 million gallons of gasoline per year. The upper end of the risk range (i.e., 120 in a million) represents a hypothetical worst case scenario for an extremely large GDF under rural air dispersion conditions.

### **Freeways and High Traffic Roads**

Air pollution studies indicate that living close to high traffic and the associated emissions may lead to adverse health effects beyond those associated with regional air pollution in urban areas. Many of these epidemiological studies have focused on children. A number of studies identify an association between adverse non-cancer health effects and living or attending school near heavily traveled roadways (see findings below). These studies have reported associations between residential proximity to high traffic roadways and a variety of respiratory symptoms, asthma exacerbations, and decreases in lung function in children.

One such study that found an association between traffic and respiratory symptoms in children was conducted in the San Francisco Bay Area. Measurements of traffic-related pollutants showed concentrations within 300 meters (approximately 1,000 feet) downwind of freeways were higher than regional values. Most other studies have assessed exposure based on proximity factors such as distance to freeways or traffic density.

These studies linking traffic emissions with health impacts build on a wealth of data on the adverse health effects of ambient air pollution. The data on the effects of proximity to traffic-related emissions provides additional information that can be used in land use siting and regulatory actions by air agencies. The key observation in these studies is that close proximity increases both exposure and the potential for adverse health effects. Other effects associated with traffic emissions include premature death in elderly individuals with heart disease.

### **Key Health Findings**

- Reduced lung function in children was associated with traffic density, especially trucks, within 1,000 feet and the association was strongest within 300 feet. (Brunekreef, 1997)
- Increased asthma hospitalizations were associated with living within 650 feet of heavy traffic and heavy truck volume. (Lin, 2000)
- Asthma symptoms increased with proximity to roadways and the risk was greatest within 300 feet. (Venn, 2001)
- Asthma and bronchitis symptoms in children were associated with proximity to high traffic in a San Francisco Bay Area community with good overall regional air quality. (Kim, 2004)
- A San Diego study found increased medical visits in children living within 550 feet of heavy traffic. (English, 1999)

In these and other proximity studies, the distance from the roadway and truck traffic densities were key factors affecting the strength of the association with adverse health effects. In the above health studies, the association of traffic-related emissions with adverse health effects was seen within 1,000 feet and was

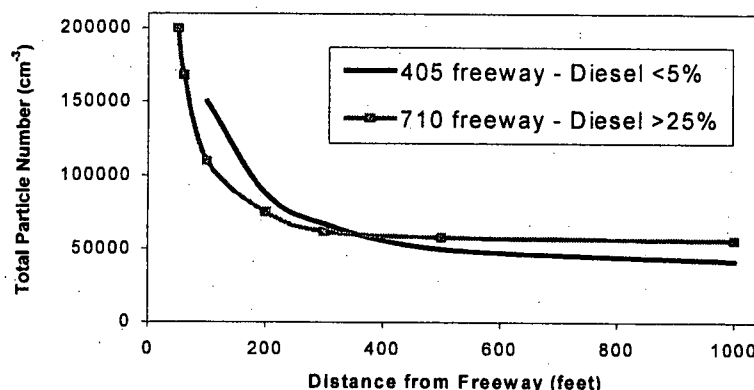
strongest within 300 feet. This demonstrates that the adverse effects diminished with distance.

In addition to the respiratory health effects in children, proximity to freeways increases potential cancer risk and contributes to total particulate matter exposure. There are three carcinogenic toxic air contaminants that constitute the majority of the known health risk from motor vehicle traffic – diesel particulate matter (diesel PM) from trucks, and benzene and 1,3-butadiene from passenger vehicles. On a typical urban freeway (truck traffic of 10,000-20,000/day), diesel PM represents about 70 percent of the potential cancer risk from the vehicle traffic. Diesel particulate emissions are also of special concern because health studies show an association between particulate matter and premature mortality in those with existing cardiovascular disease.

#### Distance Related Findings

A southern California study (Zhu, 2002) showed measured concentrations of vehicle-related pollutants, including ultra-fine particles, decreased dramatically within approximately 300 feet of the 710 and 405 freeways. Another study looked at the validity of using distance from a roadway as a measure of exposure

**Figure 1-1**  
**Decrease In Concentration of Freeway Diesel PM Emissions**  
**With Distance**



to traffic related air pollution (Knape, 1999). This study showed that concentrations of traffic related pollutants declined with distance from the road, primarily in the first 500 feet.

These findings are consistent with air quality modeling and risk analyses done by ARB staff that show an estimated range of potential cancer risk that decreases with distance from freeways. The estimated risk varies with the local meteorology, including wind pattern. As an example, at 300 feet downwind from a freeway (Interstate 80) with truck traffic of 10,000 trucks per day, the potential cancer risk was as high as 100 in one million (ARB Roseville Rail Yard Study). The cancer health risk at 300 feet on the upwind side of the freeway was much



less. The risk at that distance for other freeways will vary based on local conditions – it may be higher or lower. However, in all these analyses the relative exposure and health risk dropped substantially within the first 300 feet. This phenomenon is illustrated in Figure 1-1.

State law restricts the siting of new schools within 500 feet of a freeway, urban roadways with 100,000 vehicles/day, or rural roadways with 50,000 vehicles with some exceptions.<sup>2</sup> However, no such requirements apply to the siting of residences, day care centers, playgrounds, or medical facilities. The available data show that exposure is greatly reduced at approximately 300 feet. In the traffic-related studies the additional health risk attributable to the proximity effect was strongest within 1,000 feet.

The combination of the children's health studies and the distance related findings suggests that it is important to avoid exposing children to elevated air pollution levels immediately downwind of freeways and high traffic roadways. These studies suggest a substantial benefit to a 500-foot separation.

The impact of traffic emissions is on a gradient that at some point becomes indistinguishable from the regional air pollution problem. As air agencies work to reduce the underlying regional health risk from diesel PM and other pollutants, the impact of proximity will also be reduced. In the meantime, as a preventative measure, we hope to avoid exposing more children and other vulnerable individuals to the highest concentrations of traffic-related emissions.

#### Recommendation

- Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.

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<sup>2</sup> Section 17213 of the California Education Code and section 21151.8 of the California Public Resources Code. See also Appendix E for a description of special processes that apply to school siting.

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### **Distribution Centers**

Distribution centers or warehouses are facilities that serve as a distribution point for the transfer of goods. Such facilities include cold storage warehouses, goods transfer facilities, and inter-modal facilities such as ports. These operations involve trucks, trailers, shipping containers, and other equipment with diesel engines. A distribution center can be comprised of multiple centers or warehouses within an area. The size can range from several to hundreds of acres, involving a number of different transfer operations and long waiting periods. A distribution center can accommodate hundreds of diesel trucks a day that deliver, load, and/or unload goods up to seven days a week. To the extent that these trucks are transporting perishable goods, they are equipped with diesel-powered transport refrigeration units (TRUs) or TRU generator sets.

The activities associated with delivering, storing, and loading freight produces diesel PM emissions. Although TRUs have relatively small diesel-powered engines, in the normal course of business, their emissions can pose a significant health risk to those nearby. In addition to onsite emissions, truck travel in and out of distribution centers contributes to the local pollution impact.

ARB is working to reduce diesel PM emissions through regulations, financial incentives, and enforcement programs. In 2004, ARB adopted two airborne toxic control measures that will reduce diesel PM emissions associated with distribution centers. The first will limit nonessential (or unnecessary) idling of diesel-fueled commercial vehicles, including those entering from other states or countries. This statewide measure, effective in 2005, prohibits idling of a vehicle more than five minutes at any one location.<sup>3</sup> The elimination of unnecessary idling will reduce the localized impacts caused by diesel PM and other air toxics

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<sup>3</sup> For further information on the Anti-Idling ATCM, please click on: <http://www.arb.ca.gov/toxics/idling/outreach/factsheet.pdf>

in diesel vehicle exhaust. This should be a very effective new strategy for reducing diesel PM emissions at distribution centers as well as other locations.

The second measure requires that TRUs operating in California become cleaner over time. The measure establishes in-use performance standards for existing TRU engines that operate in California, including out-of-state TRUs. The requirements are phased-in beginning in 2008, and extend to 2019.<sup>4</sup>

ARB also operates a smoke inspection program for heavy-duty diesel trucks that focuses on reducing truck emissions in California communities. Areas with large numbers of distribution centers are a high priority.

### Key Health Findings

Diesel PM has been identified by ARB as a toxic air contaminant and represents 70 percent of the known potential cancer risk from air toxics in California. Diesel PM is an important contributor to particulate matter air pollution. Particulate matter exposure is associated with premature mortality and health effects such as asthma exacerbation and hospitalization due to aggravating heart and lung disease.

### Distance Related Findings

Although distribution centers are located throughout the state, they are usually clustered near transportation corridors, and are often located in or near population centers. Diesel PM emissions from associated delivery truck traffic and TRUs at these facilities may result in elevated diesel PM concentrations in neighborhoods surrounding those sites. Because ARB regulations will restrict truck idling at distribution centers, the largest continuing onsite diesel PM emission source is the operation of TRUs. Truck travel in and out of distribution centers also contributes to localized exposures, but specific travel patterns and truck volumes would be needed to identify the exact locations of the highest concentrations.

As part of the development of ARB's regulation for TRUs, ARB staff performed air quality modeling to estimate exposure and the associated potential cancer risk of onsite TRUs for a typical distribution center. For an individual person, cancer risk estimates for air pollution are commonly expressed as a probability of developing cancer from a lifetime (i.e., 70 years) of exposure. These risks were calculated independent of regional risk. For example, the estimated regional cancer risk from air toxics in the Los Angeles region (South Coast Air Basin) is approximately 1,000 additional cancer cases per one million population.

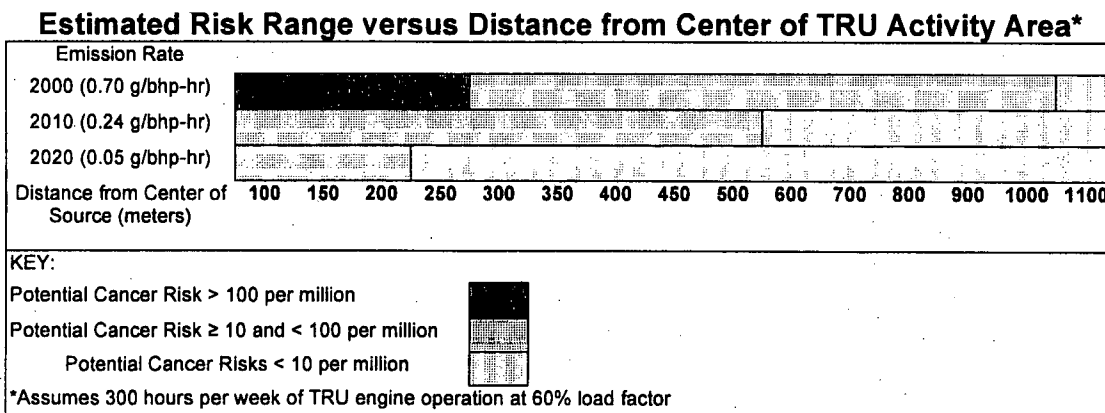
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<sup>4</sup> For further information on the Transport Refrigeration Unit ATCM, please click on: <http://www.arb.ca.gov/diesel/documents/trufaq.pdf>

The diesel PM emissions from a facility are dependent on the size (horsepower), age, and number of engines, emission rates, the number of hours the truck engines and/or TRUs operate, distance, and meteorological conditions at the site. This assessment assumes a total on-site operating time for all TRUs of 300 hours per week. This would be the equivalent of 40 TRU-equipped trucks a day, each loading or unloading on-site for one hour, 12 hours a day and seven days a week.

As shown in Figure 1-2 below, at this estimated level of activity and assuming a current fleet diesel PM emission rate, the potential cancer risk would be over 100 in a million at 800 feet from the center of the TRU activity. The estimated potential cancer risk would be in the 10 to 100 per million range between 800 to 3,300 feet and fall off to less than 10 per million at approximately 3,600 feet. However with the implementation of ARB's regulation on TRUs, the risk will be significantly reduced.<sup>5</sup> We have not conducted a risk assessment for distribution centers based on truck traffic alone, but on an emissions basis, we would expect similar risks for a facility with truck volumes in the range of 100 per day.

**Figure 1-2**

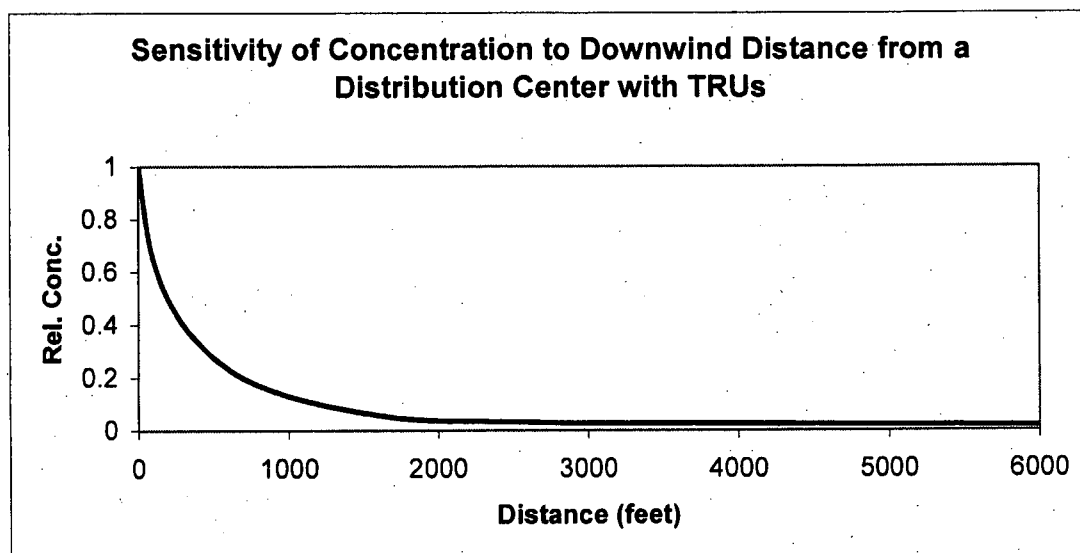


The estimated potential cancer risk level in Figure 1-2 is based on a number of assumptions that may not reflect actual conditions for a specific site. For example, increasing or decreasing the hours of diesel engine operations would change the potential risk levels. Meteorological and other facility specific parameters can also impact the results. Therefore, the results presented here are not directly applicable to any particular facility or operation. Rather, this information is intended to provide an indication as to the potential relative levels of risk that may be observed from operations at distribution centers. As shown in Figure 1-2, the estimated risk levels will decrease over time as lower-emitting diesel engines are used.

<sup>5</sup> These risk values assume an exposure duration of 70 years for a nearby resident and uses the methodology specified in the 2003 OEHHA health risk assessment guidelines.

Another air modeling analysis, performed by the South Coast Air Quality Management District (South Coast AQMD), evaluated the impact of diesel PM emissions from distribution center operations in the community of Mira Loma in southern California. Based on dispersion of diesel PM emissions from a large distribution center, Figure 1-3 shows the relative pollution concentrations at varying distances downwind. As Figure 1-3 shows, there is about an 80 percent drop off in concentration at approximately 1,000 feet.

**Figure 1-3**  
**Decrease In Relative Concentration of Risk**  
**With Distance**



Both the ARB and the South Coast AQMD analyses indicate that providing a separation of 1,000 feet would substantially reduce diesel PM concentrations and public exposure downwind of a distribution center. While these analyses do not provide specific risk estimates for distribution centers, they provide an indication of the range of risk and the benefits of providing a separation. ARB recommends a separation of 1,000 feet based on the combination of risk analysis done for TRUs and the decrease in exposure predicted with the South Coast AQMD modeling. However, ARB staff plans to provide further information on distribution centers as we collect more data and implement the TRU control measure.

Taking into account the configuration of distribution centers can also reduce population exposure and risk. For example, locating new sensitive land uses away from the main entry and exit points helps to reduce cancer risk and other health impacts.

### Recommendations

- Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating TRUs per day, or where TRU unit operations exceed 300 hours per week).
- Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.

### References

- *Airborne Toxic Control Measure To Limit Diesel-Fueled Commercial Motor Vehicle Idling*. ARB (August 20, 2004). Rule effectiveness date awaiting submittal of regulation to the Office of Administration Law.  
<http://www.arb.ca.gov/regact/idling/idling.htm>
- *Revised Staff Report: Initial Statement of Reasons for Proposed Rulemaking. Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate*. ARB (October 28, 2003).  
<http://www.arb.ca.gov/regact/trude03/revisor.doc>
- *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*. SCAQMD (August 2003) [http://www.aqmd.gov/ceqa/handbook/diesel\\_analysis.doc](http://www.aqmd.gov/ceqa/handbook/diesel_analysis.doc)
- "Mira Loma Study: Analysis of the Impact of Diesel Particulate Emissions from Warehouse/Distribution Center Operations", PowerPoint presentation. SCAQMD (July 31, 2002)

### Rail Yards

Rail yards are a major source of diesel particulate air pollution. They are usually located near inter-modal facilities, which attract heavy truck traffic, and are often sited in mixed industrial and residential areas. ARB, working with the Placer County air district and Union Pacific Railroad, recently completed a study<sup>6</sup> of the Roseville Rail Yard (Yard) in northern California that focused on the health risk from diesel particulate. A comprehensive emissions analysis and air quality modeling were conducted to characterize the estimated potential cancer risk associated with the facility.

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<sup>6</sup> To review the study, please click on: <http://www.arb.ca.gov/diesel/documents/rrstudy.htm>

The Yard encompasses about 950 acres on a one-quarter mile wide by four-mile long strip of land that parallels Interstate 80. It is surrounded by commercial, industrial, and residential properties. The Yard is one of the largest service and maintenance rail yards in the West with over 30,000 locomotives visiting annually.

Using data provided by Union Pacific Railroad, the ARB determined the number and type of locomotives visiting the Yard annually and what those locomotives were doing - moving, idling, or undergoing maintenance testing. Union Pacific provided the annual, monthly, daily, and hourly locomotive activity in the yard including locomotive movements; routes for arrival, departure, and through trains; and locomotive service and testing. This information was used to estimate the emissions of particulate matter from the locomotives, which was then used to model the potential impacts on the surrounding community.

The key findings of the study are:

- Diesel PM emissions in 2000 from locomotive operations at the Roseville Yard were estimated at about 25 tons per year.
- Of the total diesel PM in the Yard, moving locomotives accounted for about 50 percent, idling locomotives about 45 percent, and locomotive testing about five percent.
- Air quality modeling predicts potential cancer risks greater than 500 in a million (based on 70 years of exposure) in a 10-40 acre area immediately adjacent to the Yard's maintenance operations.
- The risk assessment also showed elevated cancer risk impacting a larger area covering about a 10 by 10 mile area around the Yard.

The elevated concentrations of diesel PM found in the study contribute to an increased risk of cancer and premature death due to cardiovascular disease, and non-cancer health effects such as asthma and other respiratory illnesses. The magnitude of the risk, the general location, and the size of the impacted area depended on the meteorological data used to characterize conditions at the Yard, the dispersion characteristics, and exposure assumptions. In addition to these variables, the nature of locomotive activity will influence a risk characterization at a particular rail yard. For these reasons, the quantified risk estimates in the Roseville Rail Yard Study cannot be directly applied to other rail yards. However, the study does indicate the health risk due to diesel PM from rail yards needs to be addressed. ARB, in conjunction with the U.S. Environmental Protection Agency (U.S. EPA), and local air districts, is working with the rail industry to identify and implement short term, mid-term and long-term mitigation strategies. ARB also intends to conduct a second rail study in southern California to increase its understanding of rail yard operations and the associated public health impacts.

### Key Health Findings

Diesel PM has been identified by ARB as a toxic air contaminant and represents 70 percent of the known potential cancer risk from air toxics in California. Diesel PM is an important contributor to particulate matter air pollution. Particulate matter exposure is associated with premature mortality and health effects such as asthma exacerbation and hospitalization due to aggravating heart and lung disease.

### Distance Related Findings

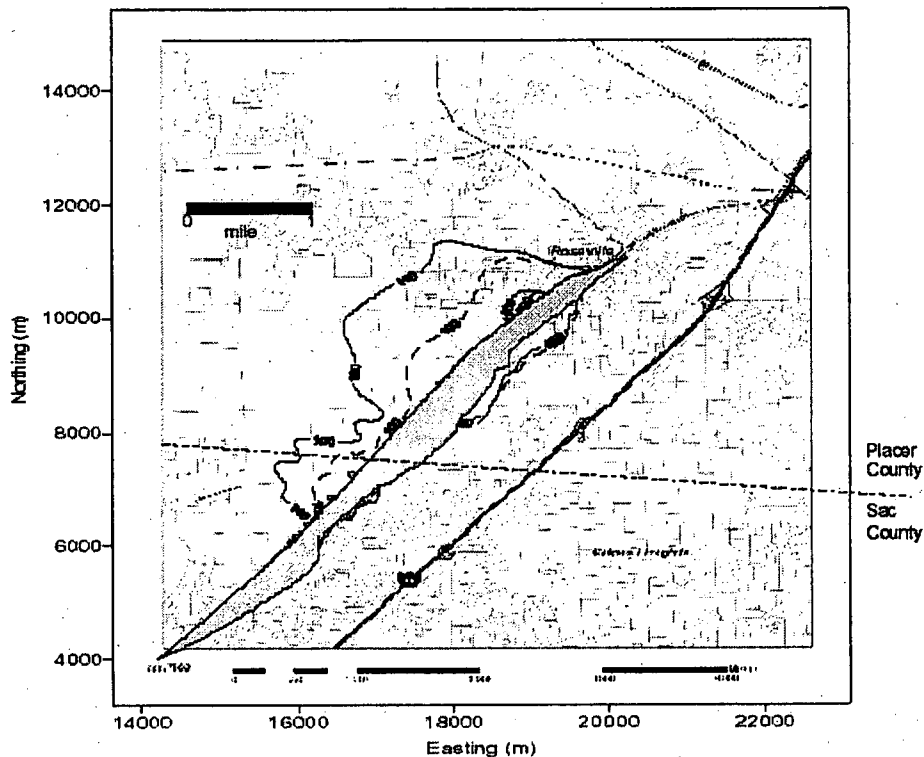
Two sets of meteorological data were used in the Roseville study because of technical limitations in the data. The size of the impact area was highly dependent on the meteorological data set used. The predicted highest impact area ranged from 10 - 40 acres with the two different meteorological data sets. This area, with risks estimated above 500 in a million, is adjacent to an area that includes a maintenance shop (see Figure 1-4). The high concentration of diesel PM emissions is due to the number of locomotives and nature of activities in this area, particularly idling locomotives.

The area of highest impact is within 1,000 feet of the Yard. The next highest impact zone as defined in the report had a predicted risk between 500 and 100 in one million and extends out between a half to one mile in some spots, depending on which meteorological conditions were assumed. The impact areas are irregular in shape making it difficult to generalize about the impact of distance at a particular location. However, the Roseville Rail Yard Study clearly indicates that the localized health risk is high, the impact area is large, and mitigation of the locomotive diesel PM emissions is needed.

For facilities like rail yards and ports, the potential impact area is so large that the real solution is to substantially reduce facility emissions. However, land use planners can avoid encroaching upon existing rail facilities and those scheduled for expansion. We also recommend that while air agencies tackle this problem, land use planners try not to add new sensitive individuals into the highest exposure areas. Finally, we recommend that land use agencies consider the potential health impacts of rail yards in their planning and permitting processes. Additional limitations and mitigation may be feasible to further reduce exposure on a site-specific basis.



**Figure 1-4**  
**Estimated Cancer Risk from the Yard**  
**(100 and 500 in a million risk isopleths)**



Notes: 100/Million Contours: Solid Line – Roseville Met Data; Dashed Line-McClellan Met Data, Urban Dispersion Coefficients, 80<sup>th</sup> Percentile Breathing Rate, All Locomotives' Activities (23 TPY), 70-Year Exposure

### Recommendation

- Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard<sup>7</sup>.
- Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.

### References

- *Roseville Rail Yard Study*: ARB (2004)

<sup>7</sup> The rail yard risk analysis was conducted for the Union Pacific rail yard in Roseville, California. This rail yard is one of the largest in the state. There are other rail yards in California with comparable levels of activity that should be considered "major" for purposes of this Handbook.

## Ports

Air pollution from maritime port activities is a growing concern for regional air quality as well as air quality in nearby communities. The primary air pollutant associated with port operations is directly emitted diesel particulate. Port-related activities also result in emissions that form ozone and secondary particulate in the atmosphere. The emission sources associated with ports include diesel engine-powered ocean-going ships, harbor craft, cargo handling equipment, trucks, and locomotives. The size and concentration of these diesel engines makes ports one of the biggest sources of diesel PM in the state. For that reason, ARB has made it a top priority to reduce diesel PM emissions at the ports, in surrounding communities, and throughout California.

International, national, state, and local government collaboration is critical to reducing port emissions based on both legal and practical considerations. For example, the International Maritime Organization (IMO) and the U.S. EPA establish emission standards for ocean-going vessels and U.S.-flagged harbor craft, respectively. ARB is pursuing further federal actions to tighten these standards. In addition, ARB and local air districts are reducing emissions from ports through a variety of approaches. These include: incentive programs to fund cleaner engines, enhanced enforcement of smoke emissions from ships and trucks, use of dockside electricity instead of diesel engines, cleaner fuels for ships, harbor craft, locomotives, and reduced engine idling. The two ATCMs that limit truck idling and reduce emissions from TRUs (discussed under "Distribution Centers") also apply to ports.

ARB is also developing several other regulations that will reduce port-related emissions. One rule would require ocean-going ships to use a cleaner marine diesel fuel to power auxiliary engines while in California coastal waters and at dock. Ships that frequently visit California ports would also be required to further reduce their emissions. ARB has adopted a rule that would require harbor craft to use the same cleaner diesel fuel used by on-road trucks in California. In 2005, ARB will consider a rule that would require additional controls for in-use harbor craft, such as the use of add-on emission controls and accelerated turnover of older engines.

## Key Health Findings

Port activities are a major source of diesel PM. Diesel PM has been identified by ARB as a toxic air contaminant and represents 70 percent of the known potential cancer risk from air toxics in California. Diesel PM is an important contributor to particulate matter air pollution. Particulate matter exposure is associated with premature mortality and health effects such as asthma exacerbation and hospitalization due to aggravating heart and lung disease.

### Distance Related Findings

The Ports of Los Angeles and Long Beach provide an example of the emissions impact of port operations. A comprehensive emissions inventory was completed in June 2004. These ports combined are one of the world's largest and busiest seaports. Located in San Pedro Bay, about 20 miles south of downtown Los Angeles, the port complex occupies approximately 16 square miles of land and water. Port activities include five source categories that produce diesel emissions. These are ocean-going vessels, harbor craft, cargo handling equipment, railroad locomotives, and heavy-duty trucks.

The baseline emission inventory provides emission estimates for all major air pollutants. This analysis focuses on diesel PM from in-port activity because these emissions have the most potential health impact on the areas adjacent to the port. Ocean vessels are the largest overall source of diesel PM related to the ports, but these emissions occur primarily outside of the port in coastal waters, making the impact more regional in nature.

The overall in-port emission inventory for diesel particulate for the ports of Los Angeles and Long Beach is estimated to be 550 tons per year. The emissions fall in the following major categories: ocean-going vessels (17%), harbor craft (25%), cargo handling (47%), railroad locomotive (3%), and heavy duty vehicles (8%). In addition to in-port emissions, ship, rail, and trucking activities also contribute to regional emissions and increase emissions in nearby neighborhoods. Off-port emissions associated with related ship, rail, and trucking activities contribute an additional 680 tons per year of diesel particulate at the Port of Los Angeles alone.

To put this in perspective, the diesel PM emissions estimated for the Roseville Yard in ARB's 2004 study are 25 tons per year. The potential cancer risk associated with these emissions is 100 in one million at a distance of one mile, or one half mile, depending on the data set used. This rail yard covers one and a half square miles. The Los Angeles and Long Beach ports have combined diesel PM emissions of 550 tons per year emitted from a facility that covers a much larger area - 16 miles. The ports have about twice the emission density of the rail yard - 34 tons per year per square mile compared to 16 tons per year per square mile. However, while this general comparison is illustrative of the overall size of the complex, a detailed air quality modeling analysis would be needed to assess the potential health impact on specific downwind areas near the ports.

ARB is in the process of evaluating the various port-related emission sources from the standpoint of existing emissions, growth forecasts, new control options, regional air quality impacts, and localized health risk. A number of public processes - both state and local - are underway to address various aspects of these issues. Until more of these analyses are complete, there is little basis for recommending a specific separation between new sensitive land uses and ports.

For example, the type of data we have showing the relationship between air pollutant concentrations and distance from freeways is not yet available.

Also, the complexity of the port facilities makes a site-specific analysis critical. Ports are a concentration of multiple emission sources with differing dispersion and other characteristics. In the case of the Roseville rail yard, we found a high, very localized impact associated with a particular activity, service and maintenance. By contrast, the location, size, and nature of impact areas can be expected to vary substantially for different port activities. For instance, ground level emissions from dockside activities would behave differently from ship stack level emissions.

Nonetheless, on an emissions basis alone, we expect locations downwind of ports to be substantially impacted. For that reason, we recommend that land use agencies track the current assessment efforts, and consider limitations on the siting of new sensitive land uses in areas immediately downwind of ports.

#### Recommendations

Avoid siting new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.

#### References

- *Roseville Rail Yard Study*. ARB (2004)
- Final Draft, "*Port-Wide Baseline Air Emissions Inventory*." Port of Los Angeles (June 2004)
- Final Draft, "*2002 Baseline Air Emissions Inventory*." Port of Long Beach (February 2004)

#### Petroleum Refineries

A petroleum refinery is a complex facility where crude oil is converted into petroleum products (primarily gasoline, diesel fuel, and jet fuel), which are then transported through a system of pipelines and storage tanks for final distribution by delivery truck to fueling facilities throughout the state. In California, most crude oil is delivered either by ship from Alaska or foreign sources, or is delivered via pipeline from oil production fields within the state. The crude oil then undergoes many complex chemical and physical reactions, which include distillation, catalytic cracking, reforming, and finishing. These refining processes have the potential to emit air contaminants, and are subject to extensive emission controls by district regulations.

As a result of these regulations covering the production, marketing, and use of gasoline and other oil by-products, California has seen significant regional air quality benefits both in terms of cleaner fuels and cleaner operating facilities. In

the 1990s, California refineries underwent significant modifications and modernization to produce cleaner fuels in response to changes in state law. Nevertheless, while residual emissions are small when compared to the total emissions controlled from these major sources, refineries are so large that even small amounts of fugitive, uncontrollable emissions and associated odors from the operations, can be significant. This is particularly the case for communities that may be directly downwind of the refinery. Odors can cause health symptoms such as nausea and headache. Also, because of the size, complexity, and vast numbers of refinery processes onsite, the occasional refinery upset or malfunction can potentially result in acute or short-term health effects to exposed individuals.

### Key Health Findings

Petroleum refineries are large single sources of emissions. For volatile organic compounds (VOCs), eight of the ten largest stationary sources in California are petroleum refineries. For oxides of nitrogen (NOx), four of the ten largest stationary sources in California are petroleum refineries. Both of these compounds react in the presence of sunlight to form ozone. Ozone impacts lung function by irritating and damaging the respiratory system. Petroleum refineries are also large stationary sources of both particulate matter under 10 microns in size (PM<sub>10</sub>) and particulate matter under 2.5 microns in size (PM<sub>2.5</sub>). Exposure to particulate matter aggravates a number of respiratory illnesses, including asthma, and is associated with premature mortality in people with existing cardiac and respiratory disease. Both long-term and short-term exposure can have adverse health impacts. Finer particles pose an increased health risk because they can deposit deep in the lung and contain substances that are particularly harmful to human health. NOx are also significant contributors to the secondary formation of PM<sub>2.5</sub>.

Petroleum refineries also emit a variety of toxic air pollutants. These air toxics vary by facility and process operation but may include: acetaldehyde, arsenic, antimony, benzene, beryllium, 1,3-butadiene, cadmium compounds, carbonyl sulfide, carbon disulfide, chlorine, dibenzofurans, diesel particulate matter, formaldehyde, hexane, hydrogen chloride, lead compounds, mercury compounds, nickel compounds, phenol, 2,3,7,8 tetrachlorodibenzo-p-dioxin, toluene, and xylenes (mixed) among others. The potential health effects associated with these air toxics can include cancer, respiratory irritation, and damage to the central nervous system, depending on exposure levels.

### Distance Related Findings

Health risk assessments for petroleum refineries have shown risks from toxic air pollutants that have quantifiable health risk values to be around 10 potential cancer cases per million. Routine air monitoring and several air monitoring studies conducted in the San Francisco Bay Area (Crockett) and the South Coast Air Basin (Wilmington) have not identified significant health risks specifically

associated with refineries. However, these studies did not measure diesel PM as no accepted method currently exists, and there are many toxic air pollutants that do not have quantifiable health risk values.

In 2002, ARB published a report on the results of the state and local air district air monitoring done near oil refineries. The purpose of this evaluation was to try to determine how refinery-related emissions might impact nearby communities. This inventory of air monitoring activities included 10 ambient air monitoring stations located near refineries in Crockett and four stations near refineries in Wilmington. These monitoring results did not identify significant increased health risks associated with the petroleum refineries. In 2002-2003, ARB conducted additional monitoring studies in communities downwind of refineries in Crockett and Wilmington. These monitoring results also did not indicate significant increased health risks from the petroleum refineries.

Consequently, there are no air quality modeling or air monitoring data that provides a quantifiable basis for recommending a specific separation between refineries and new sensitive land uses. However, in view of the amount and potentially hazardous nature of many of the pollutants released as part of the refinery process, we believe the siting of new sensitive land uses immediately downwind should be avoided. Land use agencies should consult with the local air district when considering how to define an appropriate separation for refineries within their jurisdiction.

### Recommendations

- Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.

### References

- *Review of Current Ambient Air Monitoring Activities Related to California Bay Area and South Coast Refineries.* ARB (March 2002)  
<http://www.arb.ca.gov/aqmq/qmosqual/special/mldrefinery.pdf>
- *Community Air Quality Monitoring: Special Studies – Crockett.* ARB (September 2004)  
<http://www.arb.ca.gov/ch/communities/studies/crockett/crockett.htm>
- *Wilmington Study - Air Monitoring Results.* ARB (2003)  
<http://www.arb.ca.gov/ch/communities/studies/wilmington/wilmington.htm>

### Chrome Plating Operations

Chrome plating operations rely on the use of the toxic metal hexavalent chromium, and have been subject to ARB and local air district control programs for many years. Regulation of chrome plating operations has reduced statewide emissions substantially. However, due to the nature of chrome plating

operations and the highly toxic nature of hexavalent chromium, the remaining health risk to nearby residents is a continuing concern.

Chrome plating operations convert hexavalent chromium in solution to a chromium metal layer by electroplating, and are categorized based upon the thickness of the chromium metal layer applied. In "decorative plating", a layer of nickel is first plated over a metal substrate. Following this step, a thin layer of chromium is deposited over the nickel layer to provide a decorative and protective finish, for example, on faucets and automotive wheels. "Hard chrome plating" is a process in which a thicker layer of chromium metal is deposited directly on metal substrates such as engine parts, industrial machinery, and tools to provide greater protection against corrosion and wear.

Hexavalent chromium is emitted into the air when an electric current is applied to the plating bath. Emissions are dependent upon the amount of electroplating done per year and the control requirements. A unit of production referred to as an ampere-hour represents the amount of electroplating produced. Small facilities have an annual production rate of 100,000 – 500,000 ampere-hours, while medium-size facilities may have a production rate of 500,000 to about 3 million ampere-hours. The remaining larger facilities have a range of production rates that can be as high as 80 million ampere-hours.

The control requirements, which reduce emissions from the plating tanks, vary according to the size and type of the operation. Facilities either install add-on pollution control equipment, such as filters and scrubbers, or in-tank controls, such as fume suppressants and polyballs. With this combination of controls, the overall hexavalent chromium emissions have been reduced by over 90 percent. Larger facilities typically have better controls that can achieve efficiencies greater than 99 percent. However, even with stringent controls, the lack of maintenance and good housekeeping practices can lead to problems. And, since the material itself is inherently dangerous, any lapse in compliance poses a significant risk to nearby residents.

A 2002 ARB study in the San Diego community of Barrio Logan measured unexpectedly high concentrations of hexavalent chromium near chrome platers. The facilities were located in a mixed-use area with residences nearby. The study found that fugitive dust laden with hexavalent chromium was an important source of emissions that likely contributed to the elevated cancer risk. Largely as a result of this study, ARB is in the process of updating the current requirements to further reduce the emissions from these facilities.

In December 2004, the ARB adopted an ATCM to reduce emissions of hexavalent chromium and nickel from thermal spraying operations through the installation of best available control technology. The ATCM requires all existing facilities to comply with its requirements by January 1, 2006. New and modified thermal spraying operations must comply upon initial startup. An existing thermal spraying facility may be exempt from the minimum control efficiency

requirements of the ATCM if it is located at least 1,640 feet from the nearest sensitive receptor and emits no more than 0.5 pound per year of hexavalent chromium.<sup>8</sup>

### Key Health Findings

Hexavalent chromium is one of the most toxic air pollutants regulated by the State of California. Hexavalent chromium is a carcinogen and has been identified in worker health studies as causing lung cancer. Exposure to even very low levels of hexavalent chromium should be avoided.

The California Office of Environmental Health Hazard Assessment has found that: 1) many epidemiological studies show a strong association between hexavalent chromium exposure in the work place and respiratory cancer; and 2) all short-term assays reported show that hexavalent chromium compounds can cause damage to human DNA.

Hexavalent chromium when inhaled over a period of many years can cause a variety of non-cancer health effects. These health effects include damage to the nose, blood disorders, lung disease, and kidney damage. The non-cancer health impacts occur with exposures considerably higher than exposures causing significant cancer risks. It is less likely that the public would be exposed to hexavalent chromium at levels high enough to cause these non-cancer health effects. Non-cancer health effects, unlike cancer health effects, have a threshold or exposure level below which non-cancer health effects would not be expected.

### Distance Related Findings

ARB's 2002 Barrio Logan Study measured concentrations of hexavalent chromium in the air near two chrome plating facilities. The study was conducted from December 2001 to May 2002. There were two chrome platers on the street - one decorative and one hard plater. The purpose of the study was to better understand the near source impact of hexavalent chromium emissions. Air monitors were placed at residences next to the platers and at varying distances down the street. The monitors were moved periodically to look at the spatial distribution of the impact. Source testing and facility inspections identified one of the facilities as the likely source.

The first two weeks of monitoring results showed unexpectedly high levels of hexavalent chromium at a number of the monitoring sites. The high concentrations were intermittent. The concentrations ranged from 1 to 22 ng/m<sup>3</sup> compared to the statewide average of 0.1 ng/m<sup>3</sup>. If these levels were to continue for 70 years, the potential cancer risk would be 150 in one million. The highest value was found at an air monitor behind a house adjacent to one of the

<sup>8</sup> For further information on the ATCM, please refer to:  
<http://www.arb.ca.gov/regact/thermspr/thermalspr.htm>

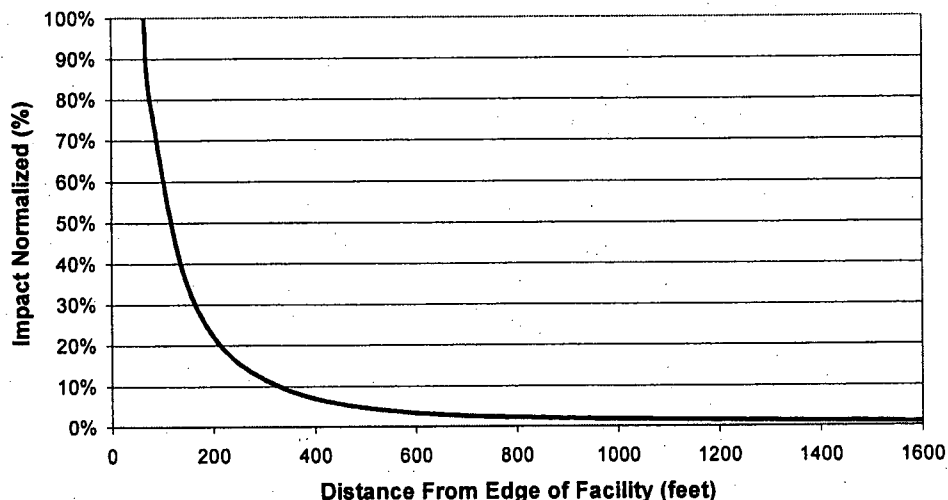


plating facilities—approximately 30 feet from the back entrance. Lower, but significant concentrations were found at an ambient air monitor 250 feet away.

The monitoring covered a period when the facility was not operating its plating tank. During this period, one of the highest concentrations was measured at an adjacent house. It appears that chromium-laden dust was responsible for high concentrations at this location since there was no plating activity at the time. Dust samples from the facility were tested and found to contain high levels of hexavalent chromium. On the day the highest concentration was measured at the house next door, a monitor 350 feet away from the plater's entrance showed very little impact. Similar proximity effects are shown in ARB modeling studies.

Figure 1-5 shows how the relative health risk varies as a function of distance from a chrome plater. This analysis is based on a medium-sized chrome plater with an annual production rate of 3 million ampere-hours. As shown in Figure 1-5, the potential health risk drops off rapidly, with over 90 percent reduction in risk within 300 feet. This modeling was done in 2003 as part of a review of ARB's current air toxic control measure for chrome platers and is based on data from a recent ARB survey of chrome platers in California. The emission

**Figure 1-5**  
**Risk vs. Distance From Chrome Plater**  
**(Based on plating tank emissions)**



rates are only for plating operations. Because there are insufficient data available to directly quantify the impacts, the analysis does not include fugitive emissions, which the Barrio Logan analysis indicated could be significant.

Both the ARB Barrio Logan monitoring results and ARB's 2003 modeling analysis suggests that the localized emissions impact of a chrome plater diminishes significantly at 300 feet. However, in developing our recommendation, we also considered the following factors:

- some chrome platers will have higher volumes of plating activity,
- potential dust impacts were not modeled,
- we have only one monitoring study looking at the impact of distance, and,
- hexavalent chromium is one of the most potent toxic air contaminants ARB has identified.

Given these limitations in the analysis, we recommend a separation of 1,000 feet as a precautionary measure. For large chrome platers, site specific information should be obtained from the local air district.

#### Recommendation

- Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.

#### References

- *Ambient Air Monitoring for Hexavalent Chromium and Metals in Barrio Logan: May 2001 through May 2002.* ARB, Monitoring and Laboratory Division (October 14, 2003)
- *Draft Barrio Logan Report.* ARB, Planning and Technical Support Division (November 2004)
- *Proposed Amendments to the Hexavalent Chromium Control Measure for Decorative and Hard Chrome Plating and Chromic Acid Anodizing Facilities.* ARB (April 1998)
- Murchison, Linda; Suer, Carolyn; Cook, Jeff. *"Neighborhood Scale Monitoring in Barrio Logan," (AWMA Annual Conference Proceedings, June 2003)*

#### Dry Cleaners Using Perchloroethylene (Perc Dry Cleaners)

Perchloroethylene (perc) is the solvent most commonly used by the dry cleaning industry to clean clothes or other materials. The ARB and other public health agencies have identified perc as a potential cancer-causing compound. Perc persists in the atmosphere long enough to contribute to both regional air pollution and localized exposures. Perc dry cleaners are the major source of perc emissions in California.

Since 1990, the statewide concentrations and health risk from exposure to perc has dropped over 70 percent. This is due to a number of regulatory requirements on perc dry cleaners and other sources, including degreasing operations, brake cleaners, and adhesives. ARB adopted an Airborne Toxic Control Measure (ATCM) for Perc Emissions from Dry Cleaning Operations in 1993. ARB has also prohibited the use of perc in aerosol adhesives and automotive brake cleaners.

Perc dry cleaners statewide are required to comply with ARB and local air district regulations to reduce emissions. However, even with these controls, some emissions continue to occur. Air quality studies indicate that there is still the potential for significant risks even near well-controlled dry cleaners. The South Coast AQMD has adopted a rule requiring that all new dry cleaners use alternatives to perc and that existing dry cleaners phase out the use of perc by December 2020. Over time, transition to non-toxic alternatives should occur. However, while perc continues to be used, a preventative approach should be taken to siting of new sensitive land uses.

#### Key Health Findings

Inhalation of perc may result in both cancer and non-cancer health effects. An assessment by California's Office of Environmental Health Hazard Assessment (OEHHA) concluded that perc is a potential human carcinogen and can cause non-cancer health effects. In addition to the potential cancer risk, the effects of long-term exposure include dizziness, impaired judgment and perception, and damage to the liver and kidneys. Workers have shown signs of liver toxicity following chronic exposure to perc, as well as kidney dysfunction and neurological effects. Non-cancer health effects occur with higher exposure levels than those associated with significant cancer risks. The public is more likely to be exposed to perchloroethylene at levels causing significant cancer risks than to levels causing non-cancer health effects. Non-cancer health effects, unlike cancer health effects, have a threshold or exposure level below which non-cancer health effects would not be expected. The ARB formally identified perc as a toxic air contaminant in October 1991.

One study has determined that inhalation of perc is the predominant route of exposure to infants living in apartments co-located in the same building with a business operating perc dry cleaning equipment. Results of air sampling within co-residential buildings indicate that dry cleaners can cause a wide range of exposures depending on the type and maintenance of the equipment. For example, a well-maintained state-of-the-art system may have risks in the range of 10 in one million, whereas a badly maintained machine with major leaks can have potential cancer risks of thousands in one million.

The California Air Pollution Control Officers Association (CAPCOA) is developing Industry-wide Risk Assessment Guidelines for Perchloroethylene Dry Cleaners which, when published, will provide detailed information on public health risk from exposure to emissions from this source.

#### Distance Related Findings

Risk created by perc dry cleaning is dependent on the amount of perc emissions, the type of dry cleaning equipment, proximity to the source, and how the emissions are released and dispersed (e.g., type of ventilation system, stack parameters, and local meteorology). Dry cleaners are often located near

residential areas, and near shopping centers, schools, day-care centers, and restaurants.

The vast majority of dry cleaners in California have one dry cleaning machine per facility. The South Coast AQMD estimates that an average well-controlled dry cleaner uses about 30 to 160 gallons of cleaning solvent per year, with an average of about 100 gallons. Based on these estimates, the South Coast AQMD estimates a potential cancer risk between 25 to 140 in one million at residential locations 75 feet or less from the dry cleaner, with an average of about 80 in one million. The estimate could be as high as 270 in one million for older machines.

CAPCOA's draft industry-wide risk assessment of perc dry cleaning operations indicates that the potential cancer risk for many dry cleaners may be in excess of potential cancer risk levels adopted by the local air districts. The draft document also indicates that, in general, the public's exposure can be reduced by at least 75 percent, by providing a separation distance of about 300 feet from the operation. This assessment is based on a single machine with perc use of about 100 gallons per year. At these distances, the potential cancer risk would be less than 10 potential cases per million for most scenarios.

The risk would be proportionately higher for large, industrial size, dry cleaners. These facilities typically have two or more machines and use 200 gallons or more per year of perc. Therefore, separation distances need to be greater for large dry cleaners. At a distance of 500 feet, the remaining risk for a large plant can be reduced by over 85 percent.

In California, a small number of dry cleaners that are co-located (sharing a common wall, floor, or ceiling) with a residence have the potential to expose the inhabitants of the residence to high levels of perc. However, while special requirements have been imposed on these existing facilities, the potential for exposure still exists. Avoiding these siting situations in the future is an important preventative measure.

Local air districts are a source of information regarding specific dry cleaning operations—particularly for large industrial operations with multiple machines. The 300 foot separation recommended below reflects the most common situation – a dry cleaner with only one machine. While we recommend 500 feet when there are two or more machines, site specific information should be obtained from the local air district for some very large industrial operations. Factors that can impact the risk include the number and type of machines, controls used, source configuration, building dimensions, terrain, and meteorological data.

### Recommendation

- Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines provide 500 feet. For operations with 3 or more machines, consult with the local air district.
- Do not site new sensitive land uses in the same building with perc dry cleaning operations.

### References

- *Proposed Amended Rule 1421 – Control of Perchloroethylene Emissions from Dry Cleaning Systems*, Final Staff Report. South Coast AQMD. (October 2002)
- *Air Toxic Control Measure for Emissions of Perchloroethylene from Dry Cleaning Operations*. ARB (1994)  
(<http://www.arb.ca.gov/toxics/atcm/percatcm.htm>)
- "An Assessment of Tetrachloroethylene in Human Breast Milk", Judith Schreiber, New York State Department of Health – Bureau of Toxic Substance Assessment, Journal of Exposure Analysis and Environmental Epidemiology, Vol.2, Suppl.2, pp. 15-26, 1992.
- *Draft Air Toxics "Hot Spots" Program Perchloroethylene Dry Cleaner Industry-wide Risk Assessment Guidelines*. (CAPCOA (November 2002)
- *Final Environmental Assessment for Proposed Amended Rule 1421 – Control of Perchloroethylene Emissions from Dry Cleaning Systems*. South Coast AQMD. (October 18, 2002)

### Gasoline Dispensing Facilities

Refueling at gasoline dispensing facilities releases benzene into the air. Benzene is a potent carcinogen and is one of the highest risk air pollutants regulated by ARB. Motor vehicles and motor vehicle-related activity account for over 90 percent of benzene emissions in California. While gasoline-dispensing facilities account for a small part of total benzene emissions, near source exposures for large facilities can be significant.

Since 1990, benzene in the air has been reduced by over 75 percent statewide, primarily due to the implementation of emissions controls on motor vehicle vapor recovery equipment at gas stations, and a reduction in benzene levels in gasoline. However, benzene levels are still significant. In urban areas, average benzene exposure is equivalent to about 50 in one million.

Gasoline dispensing facilities tend to be located in areas close to residential and shopping areas. Benzene emissions from the largest gas stations may result in near source health risk beyond the regional background and district health risk thresholds. The emergence of very high gasoline throughput at large retail or

wholesale outlets makes this a concern as these types of outlets are projected to account for an increasing market share in the next few years.

#### Key Health Findings

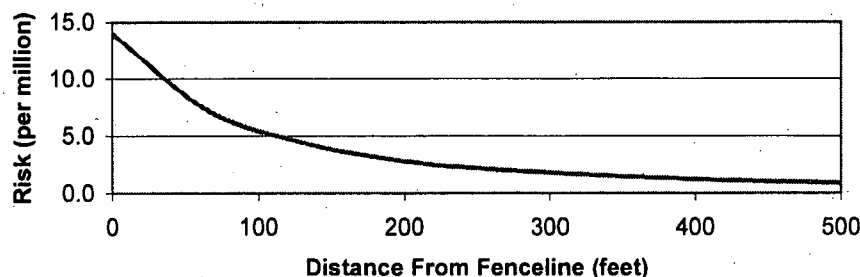
Benzene is a human carcinogen identified by ARB as a toxic air contaminant. Benzene also can cause non-cancer health effects above a certain level of exposure. Brief inhalation exposure to high concentrations can cause central nervous system depression. Acute effects include central nervous system symptoms of nausea, tremors, drowsiness, dizziness, headache, intoxication, and unconsciousness. It is unlikely that the public would be exposed to levels of benzene from gasoline dispensing facilities high enough to cause these non-cancer health effects.

#### Distance Related Findings

A well-maintained vapor recovery system can decrease emissions of benzene by more than 90% compared with an uncontrolled facility. Almost all facilities have emission control systems. Air quality modeling of the health risks from gasoline dispensing facilities indicate that the impact from the facilities decreases rapidly as the distance from the facility increases.

Statistics reported in the ARB's staff reports on Enhanced Vapor Recovery released in 2000 and 2002, indicated that almost 96 percent of the gasoline dispensing facilities had a throughput less than 2.4 million gallons per year. The remaining four percent, or approximately 450 facilities, had throughputs exceeding 2.4 million gallons per year. For these stations, the average gasoline throughput was 3.6 million gallons per year.

**Figure 1-6**  
**Gasoline Dispensing Facility Health Risk**  
**for 3,600,000 gal/yr throughput**



As shown in Figure 1-6, the risk levels for a gasoline dispensing facility with a throughput of 3.6 million gallons per year is about 10 in one million at a distance of 50 feet from the fenceline. However, as the throughput increases, the potential risk increases.

As mentioned above, air pollution levels in the immediate vicinity of large gasoline dispensing facilities may be higher than the surrounding area (although tailpipe emissions from motor vehicles dominates the health impacts). Very large gasoline dispensing facilities located at large wholesale and discount centers may dispense nine million gallons of gasoline per year or more. At nine million gallons, the potential risk could be around 25 in one million at 50 feet, dropping to about five in one million at 300 feet. Some facilities have throughputs as high as 19 million gallons.

#### Recommendation

- Avoid siting new sensitive land uses within 300 feet of a large gasoline dispensing facility (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.

#### References

- *Gasoline Service Station Industry-wide Risk Assessment Guidelines*. California Air Pollution Control Officers Association (December 1997 and revised November 1, 2001)
- *Staff Report on Enhanced Vapor Recovery*. ARB (February 4, 2000)
- *The California Almanac of Emissions and Air Quality*. ARB (2004)
- *Staff Report on Enhanced Vapor Recovery Technology Review*. ARB (October 2002)

#### Other Facility Types that Emit Air Pollutants of Concern

In addition to source specific recommendations, Table 1-3 includes a list of other industrial sources that could pose a significant health risk to nearby sensitive individuals depending on a number of factors. These factors include the amount of pollutant emitted and its toxicity, the distance to nearby individuals, and the type of emission controls in place. Since these types of facilities are subject to air permits from local air districts, facility specific information should be obtained where there are questions about siting a sensitive land use close to an industrial facility.

#### Potential Sources of Odor and Dust Complaints

Odors and dust from commercial activities are the most common sources of air pollution complaints and concerns from the public. Land use planning and permitting processes should consider the potential impacts of odor and dust on surrounding land uses, and provide for adequate separation between odor and dust sources. As with other types of air pollution, a number of factors need to be considered when determining an adequate distance or mitigation to avoid odor or

**Table 1-3 – Examples of Other Facility Types That Emit<sup>1</sup> Air Pollutants of Concern**

<b>Categories</b>	<b>Facility Type</b>	<b>Air Pollutants of Concern</b>
Commercial	Autobody Shops	Metals, Solvents
	Furniture Repair	Solvents <sup>2</sup> , Methylene Chloride
	Film Processing Services	Solvents, Perchloroethylene
	Distribution Centers	Diesel Particulate Matter
	Printing Shops	Solvents
	Diesel Engines	Diesel Particulate Matter
Industrial	Construction	Particulate Matter, Asbestos
	Manufacturers	Solvents, Metals
	Metal Platers, Welders, Metal Spray (flame spray) Operations	Hexavalent Chromium, Nickel, Metals
	Chemical Producers	Solvents, Metals
	Furniture Manufacturers	Solvents
	Shipbuilding and Repair	Hexavalent chromium and other metals, Solvents
	Rock Quarries and Cement Manufacturers	Particulate Matter, Asbestos
	Hazardous Waste Incinerators	Dioxin, Solvents, Metals
	Power Plants	Benzene, Formaldehyde, Particulate Matter
	Research and Development Facilities	Solvents, Metals, etc.
Public	Landfills	Benzene, Vinyl Chloride, Diesel Particulate Matter
	Waste Water Treatment Plants	Hydrogen Sulfide
	Medical Waste Incinerators	Dioxin, Benzene, PAH, PCBs, 1,3-Butadiene
	Recycling, Garbage Transfer Stations	Diesel Particulate Matter
	Municipal Incinerators	Dioxin, Benzene, PAH, PCBs, 1,3-Butadiene
Transportation	Truck Stops	Diesel Particulate Matter
Agricultural Operations	Farming Operations	Diesel Particulate Matter, VOCs, NOx, PM10, CO, SOx, Pesticides
	Livestock and Dairy Operations	Ammonia, VOCs, PM10

<sup>1</sup>Not all facilities will emit pollutants of concern due to process changes or chemical substitution. Consult the local air district regarding specific facilities.

<sup>2</sup>Some solvents may emit toxic air pollutants, but not all solvents are toxic air contaminants.



dust complaints in a specific situation. Local air districts should be consulted for advice when these siting situations arise.

Table 1-4 lists some of the most common sources of odor complaints received by local air districts. Complaints about odors are the responsibility of local air districts and are covered under state law. The types of facilities that can cause odor complaints are varied and can range from small commercial facilities to large industrial facilities, and may include waste disposal and recycling operations. Odors can cause health symptoms such as nausea and headache. Facilities with odors may also be sources of toxic air pollutants (See Table 1-3). Some common sources of odors emitted by facilities

are sulfur compounds, organic solvents, and the decomposition/digestion of biological materials. Because of the subjective nature of an individual's sensitivity to a particular type of odor, there is no specific rule for assigning appropriate separations from odor sources. Under the right meteorological conditions, some odors may still be offensive several miles from the source.

**Table 1-4**  
**Sources of Odor Complaints**

- Sewage Treatment Plants
- Landfills
- Recycling Facilities
- Waste Transfer Stations
- Petroleum Refineries
- Biomass Operations
- Autobody Shops
- Coating Operations
- Fiberglass Manufacturing
- Foundries
- Rendering Plants
- Livestock Operations

Sources of dust are also common sources of air pollution-related complaints. Operations that can result in dust problems are rock crushing, gravel production, stone quarrying, and mining operations. A common source of complaints is the dust and noise associated with blasting that may be part of these operations. Besides the health impacts of dust as particulate matter, thick dust also impairs visibility, aesthetic values, and can soil homes and automobiles. Local air districts typically have rules for regulating dust sources in their jurisdictions, but dust sources can still be a concern. Therefore, separation of these facilities from residential and other new sensitive land uses should be considered.

In some areas of California, asbestos occurs naturally in stone deposits. Asbestos is a potent carcinogenic substance when inhaled. Asbestos-containing dust may be a public health concern in areas where asbestos-containing rock is mined, crushed, processed, or used. Situations where asbestos-containing gravel has been used in road paving materials are also a source of asbestos exposure to the general public. Planners are advised to consult with local air pollution agencies in areas where asbestos-containing gravel or stone products are produced or used.

## 2. Handbook Development

ARB and local air districts share responsibility for improving statewide air quality. As a result of California's air pollution control programs, air quality has improved and health risk has been reduced statewide. However, state and federal air quality standards are still exceeded in many areas of California and the statewide health risk posed by toxic air contaminants (air toxics) remains too high. Also, some communities experience higher pollution exposures than others - making localized impacts, as well regional or statewide impacts, an important consideration. It is for this reason that this Handbook has been produced - to promote better, more informed decision-making by local land use agencies that will improve air quality and public health in their communities.

Land use policies and practices, including planning, zoning, and siting activities, can play a critical role in air quality and public health at the local level. For instance, even with the best available control technology, some projects that are sited very close to homes, schools, and other public places can result in elevated air pollution exposures. The reverse is also true - siting a new school or home too close to an existing source of air pollution can pose a public health risk. The ARB recommendations in section 1 address this issue.

*This Handbook is an informational document that we hope will strengthen the relationship between air quality and land use agencies. It highlights the need for land use agencies to address the potential for new projects to result in localized health risk or contribute to cumulative impacts where air pollution sources are concentrated.*

Avoiding these incompatible land uses is a key to reducing localized air pollution exposures that can result in adverse health impacts, especially to sensitive individuals.

Individual siting decisions that result in incompatible land uses are often the result of locating "sensitive" land uses next to polluting sources. These decisions can be of even greater concern when existing air pollution exposures in a community are considered. In general terms, this is often referred to as the issue of "cumulative impacts." ARB is working with local air districts to better define these situations and to make information about existing air pollution levels (e.g., from local businesses, motor vehicles, and other areawide sources) more readily available to land use agencies.

In December 2001, the ARB adopted "Policies and Actions for Environmental Justice" (Policies). These Policies were developed in coordination with a group of stakeholders, representing local government agencies, community interest

groups, environmental justice organizations, academia, and business (Environmental Justice Stakeholders Group).

The Policies included a commitment to work with land use planners, transportation agencies, and local air districts to develop ways to identify, consider, and reduce cumulative air pollution emissions, exposure, and health risks associated with land use planning and decision-making. Developed under the auspices of the ARB's Environmental Justice Stakeholders Group, this Handbook is a first step in meeting that commitment.

ARB has produced this Handbook to help achieve several objectives:

- Provide recommendations on situations to avoid when siting new residences, schools, day care centers, playgrounds, and medical-related facilities (sensitive sites or sensitive land uses);
- Identify approaches that land use agencies can use to prevent or reduce potential air pollution impacts associated with general plan policies, new land use development, siting, and permitting decisions;
- Improve and facilitate access to air quality data and evaluation tools for use in the land use decision-making process;
- Encourage stronger collaboration between land use agencies and local air districts to reduce community exposure to source-specific and cumulative air pollution impacts; and
- Emphasize community outreach approaches that promote active public involvement in the air quality/land use decision-making process.

This Handbook builds upon California's 2003 General Plan Guidelines. These Guidelines, developed by the Governor's Office of Planning and Research (OPR), explain the land use planning process and applicable legal requirements. This Handbook also builds upon a 1997 ARB report, "The Land Use-Air Quality Linkage" ("Linkage Report").<sup>9</sup> The Linkage Report was an outgrowth of the California Clean Air Act which, among other things, called upon local air districts to focus particular attention on reducing emissions from sources that indirectly cause air pollution by attracting vehicle trips. Such indirect sources include, but are not limited to, shopping centers, schools and universities, employment centers, warehousing, airport hubs, medical offices, and sports arenas. The Linkage Report summarizes data as of 1997 on the relationships between land use, transportation, and air quality, and highlights strategies that can help to reduce the use of single occupancy automobile use. Such strategies

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<sup>9</sup> To access this report, please refer to ARB's website or click on:  
<http://www.arb.ca.gov/ch/programs/link97.pdf>

complement ARB regulatory programs that continue to reduce motor vehicle emissions.

In this Handbook, we identify types of air quality-related information that we recommend land use agencies consider in the land use decision-making processes such as the development of regional, general, and community plans; zoning ordinances; environmental reviews; project siting; and permit issuance. The Handbook provides recommendations on the siting of new sensitive land uses based on current analyses. It also contains information on approaches and methodologies for evaluating new projects from an air pollution perspective.

The Handbook looks at air quality issues associated with emissions from industrial, commercial, and mobile sources of air pollution. Mobile sources continue to be the largest overall contributors to the state's air pollution problems, representing the greatest air pollution health risk to most Californians. Based on current health risk information for air toxics, the most serious pollutants on a statewide basis are diesel PM, benzene, and 1,3-butadiene, all of which are primarily emitted by motor vehicles. From a state perspective, ARB continues to pursue new strategies to further reduce motor vehicle-related emissions in order to meet air quality standards and reduce air toxics risk.

While mobile sources are the largest overall contributors to the state's air pollution problems, industrial and commercial sources can also pose a health risk, particularly to people near the source. For this reason, the issue of incompatible land uses is an important focus of this document.

### **Handbook Audience**

Even though the primary users of the Handbook will likely be agencies responsible for air quality and land use planning, we hope the ideas and technical issues presented in this Handbook will also be useful for:

- public and community organizations and community residents;
- federal, state and regional agencies that fund, review, regulate, oversee, or otherwise influence environmental policies and programs affected by land use policies; and
- private developers.

### **3. Key Community Focused Issues Land Use Agencies Should Consider**

Two key air quality issues that land use agencies should consider in their planning, zoning, and permitting processes are:

- 1) Incompatible Land Uses.** Localized air pollution impacts from incompatible land use can occur when polluting sources, such as a heavily trafficked roadway, warehousing facilities, or industrial or commercial facilities, are located near a land use where sensitive individuals are found such as a school, hospital, or homes.
- 2) Cumulative Impacts.** Cumulative air pollution impacts can occur from a concentration of multiple sources that individually comply with air pollution control requirements or fall below risk thresholds, but in the aggregate may pose a public health risk to exposed individuals. These sources can be heavy or light-industrial operations, commercial facilities such as autobody shops, large gas dispensing facilities, dry cleaners, and chrome platers, and freeways or other nearby busy transportation corridors.

#### **Incompatible Land Uses**

Land use policies and practices can worsen air pollution exposure and adversely affect public health by mixing incompatible land uses. Examples include locating new sensitive land uses, such as housing or schools, next to small metal plating facilities that use a highly toxic form of chromium, or very near large industrial facilities or freeways. Based on recent monitoring and health-based studies, we now know that air quality impacts from incompatible land uses can contribute to increased risk of illness, missed work and school, a lower quality of life, and higher costs for public health and pollution control.<sup>10</sup>

Avoiding incompatible land uses can be a challenge in the context of mixed-use industrial and residential zoning. For a variety of reasons, government agencies and housing advocates have encouraged the proximity of affordable housing to employment centers, shopping areas, and transportation corridors, partially as a means to reduce vehicle trips and their associated emissions. Generally speaking, typical distances in mixed-use communities between businesses and industries and other land uses such as homes and schools, should be adequate to avoid health risks. However, generalizations do not always hold as we addressed in section 1 of this Handbook.

In terms of siting air pollution sources, the proposed location of a project is a major factor in determining whether it will result in localized air quality impacts. Often, the problem can be avoided by providing an adequate distance or setback

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<sup>10</sup> For more information, the reader should refer to ARB's website on community health:  
<http://www.arb.ca.gov/ch/ch.htm>

between a source of emissions and nearby sensitive land uses. Sometimes, suggesting project design changes or mitigation measures in the project review phase can also reduce or avoid potential impacts. This underscores the importance of addressing potential incompatible land uses as early as possible in the project review process, ideally in the general plan itself.

### **Cumulative Air Pollution Impacts**

The broad concept of cumulative air pollution impacts reflects the combination of regional air pollution levels and any localized impacts. Many factors contribute to air pollution levels experienced in any location. These include urban background air pollution, historic land use patterns, the prevalence of freeways and other transportation corridors, the concentration of industrial and commercial businesses, and local meteorology and terrain.

When considering the potential air quality impacts of polluting sources on individuals, project location and the concentration of emissions from air pollution sources need to be considered in the land use decision-making process. In section 4, the Handbook offers a series of questions that helps land use agencies determine if a project should undergo a more careful analysis. This holds true regardless of whether the project being sited is a polluting source or a sensitive land use project.

Large industrial areas are not the only land uses that may result in public health concerns in mixed-use communities. Cumulative air pollution impacts can also occur if land uses do not adequately provide setbacks or otherwise protect sensitive individuals from potential air pollution impacts associated with nearby light industrial sources. This can occur with activities such as truck idling and traffic congestion, or from indirect sources such as warehousing facilities that are located in a community or neighborhood.

In October 2004, Cal/EPA published its Environmental Justice Action Plan. In February 2005, the Cal/EPA Interagency Working Group approved a working definition of "cumulative impacts" for purposes of initially guiding the pilot projects that are being conducted pursuant to that plan. Cal/EPA is now in the process of developing a Cumulative Impacts Assessment Guidance document. Cal/EPA will revisit the working definition of "cumulative impacts" as the Agency develops that guidance. The following is the working definition:

*"Cumulative impacts means exposures, public health or environmental effects from the combined emissions and discharges, in a geographic area, including environmental pollution from all sources, whether single or multi-media, routinely, accidentally, or otherwise released. Impacts will take into account sensitive populations and socio-economic factors, where applicable, and to the extent data are available."*

#### **4. Mechanisms for Integrating Localized Air Quality Concerns Into Land Use Processes**

Land use agencies should use each of their existing planning, zoning, and permitting authorities to address the potential health risk associated with new projects. Land use-specific mechanisms can go a long way toward addressing both localized and cumulative impacts from new air pollution sources that are not otherwise addressed by environmental regulations. Likewise, close collaboration and communication between land use agencies and local air districts in both the planning and project approval stages can further reduce these impacts. Local agency partnerships can also result in early identification of potential impacts from proposed activities that might otherwise escape environmental review. When this happens, pollution problems can be prevented or reduced before projects are approved, when it is less complex and expensive to mitigate.

The land use entitlement process requires a series of planning decisions. At the highest level, the General Plan sets the policies and direction for the jurisdiction, and includes a number of mandatory elements dealing with issues such as housing, circulation, and health hazards. Zoning is the primary tool for implementing land use policies. Specific or community plans created in conjunction with a specific project also perform many of the same functions as a zoning ordinance. Zoning can be modified by means of variances and conditional use permits. The latter are frequently used to insure compatibility between otherwise conflicting land uses. Finally, new development usually requires the approval of a parcel or tract map before grading and building permits can be issued. These parcel or tract maps must be consistent with the applicable General Plan, zoning and other standards.

Land use agencies can use their planning authority to separate industrial and residential land uses, or to require mitigation where separation is not feasible. By separating incompatible land uses, land use agencies can prevent or reduce both localized and cumulative air pollution impacts without denying what might otherwise be a desirable project.<sup>11</sup> For instance:

- a dry cleaner could open a storefront operation in a community with actual cleaning operations performed at a remote location away from residential areas;
- gas dispensing facilities with lower fuel throughput could be sited in mixed-use areas;
- enhanced building ventilation or filtering systems in schools or senior care centers can reduce ambient air from nearby busy arterials; or
- landscaping and regular watering can be used to reduce fugitive dust at a building construction site near a school yard.

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<sup>11</sup> It should be noted that such actions should also be considered as part of the General Plan or Plan element process.

The following general and specific land use approaches can help to reduce potential adverse air pollution impacts that projects may have on public health.

### **General Plans**

The primary purpose of planning, and the source of government authority to engage in planning, is to protect public health, safety, and welfare. In its most basic sense, a local government General Plan expresses the community's development goals and embodies public policy relative to the distribution of future land uses, forming the basis for most land use decisions. Therefore, the most effective mechanism for dealing with the central land use concept of compatibility and its relationship to cumulative air pollution impacts is the General Plan. Well before projects are proposed within a jurisdiction, the General Plan sets the stage for where projects can be sited, and their compatibility with comprehensive community goals, objectives, and policies.

In 2003, OPR revised its General Plan Guidelines, highlighting the importance of incorporating sustainable development and environmental justice policies in the planning process. The OPR General Plan Guidelines provides an effective and long-term approach to reduce cumulative air pollution impacts at the earliest planning stages. In light of these important additions to the Guidelines, land use agencies should consider updating their General Plans or Plan elements to address these revisions.

The General Plan and related Plan elements can be used to avoid incompatible land uses by incorporating air quality considerations into these documents. For instance, a General Plan safety element with an air quality component could be used to incorporate policies or objectives that are intended to protect the public from the potential for facility breakdowns that may result in a dangerous release of air toxics. Likewise, an air quality component to the transportation circulation element of the General Plan could include policies or standards to prevent or reduce local exposure to diesel exhaust from trucks and other vehicles. For instance, the transportation circulation element could encourage the construction of alternative routes away from residential areas for heavy-duty diesel trucks. By considering the relationship between air quality and transportation, the circulation element could also include air quality policies to prevent or reduce trips and travel, and thus vehicle emissions. Policies in the land use element of the General Plan could identify areas appropriate for future industrial, commercial, and residential uses. Such policies could also introduce design and distance parameters that reduce emissions, exposure, and risk from industrial and some commercial land uses (e.g., dry cleaners) that are in close proximity to residential areas or schools.

Land use agencies should also consider updating or creating an air quality element in the jurisdiction's General Plan. In the air quality element, local decision-makers could develop long-term, effective plans and policies to address



air quality issues, including cumulative impacts. The air quality element can also provide a general reference guide that informs local land use planners about regional and community level air quality, regulatory air pollution control requirements and guidelines, and references emissions and pollution source data bases and assessment and modeling tools. As is further described in Appendix C of the Handbook, new assessment tools that ARB is developing can be included into the air quality element by reference. For instance, ARB's statewide risk maps could be referenced in the air quality element as a resource that could be consulted by developers or land use agencies

### **Zoning**

The purpose of "zoning" is to separate different land uses. Zoning ordinances establish development controls to ensure that private development takes place within a given area in a manner in which:

- All uses are compatible (e.g., an industrial plant is not permitted in a residential area);
- Common development standards are used (e.g., all homes in a given area are set back the same minimum distance from the street); and,
- Each development does not unreasonably impose a burden upon its neighbors (e.g., parking is required on site so as not to create neighborhood parking problems).

To do this, use districts called "zones" are established and standards are developed for these zones. The four basic zones are residential, commercial, industrial and institutional.

Land use agencies may wish to consider how zoning ordinances, particularly those for mixed-use areas, can be used to avoid exacerbating poor land use practices of the past or contributing to localized and cumulative air pollution impacts in the community.

Sometimes, especially in mixed-use zones, there is a potential for certain categories of existing businesses or industrial operations to result in cumulative air pollution impacts to new development projects. For example:

- An assisted living project is proposed for a mixed-use zone adjacent to an existing chrome plating facility, or several dry cleaners;
- Multiple industrial sources regulated by a local air district are located directly upwind of a new apartment complex;
- A new housing development is sited in a mixed-use zone that is downwind or adjacent to a distribution center that attracts diesel-fueled delivery trucks and TRUs; or
- A new housing development or sensitive land use is sited without adequate setbacks from an existing major transportation corridor or rail yard.

As part of the public process for making zoning changes, local land use agencies could work with community planning groups, local businesses, and community residents to determine how best to address existing incompatible land uses.

### **Land Use Permitting Processes**

#### **■ Questions to Consider When Reviewing New Projects**

Very often, just knowing what questions to ask can yield critical information about the potential air pollution impacts of proposed projects – both from the perspective of a specific project as well as in the nature of existing air pollution sources in the same impact area. Available land use information can reveal the proximity of air pollution sources to sensitive individuals, the potential for incompatible land uses, and the location and nature of nearby air pollution sources. Air quality data, available from the ARB and local air districts, can provide information about the types and amounts of air pollution emitted in an area, regional air quality concentrations, and health risk estimates for specific sources.

General Plans and zoning maps are an excellent starting point in reviewing project proposals for their potential air pollution impacts. These documents contain information about existing or proposed land uses for a specific location as well as the surrounding area. Often, just looking at a map of the proposed location for a facility and its surrounding area will help to identify a potential adjacent incompatible land use.

The following pages are a “pull-out” list of questions to consider along with cross-references to pertinent information in the Handbook. These questions are intended to assist land use agencies in evaluating potential air quality-related concerns associated with new project proposals.

The first group of questions contains project-related queries designed to help identify the potential for localized project impacts, particularly associated with incompatible land uses. The second group of questions focuses on the issue of potential cumulative impacts by including questions about existing emissions and air quality in the community, and community feedback. Depending on the answers to these questions, a land use agency may decide a more detailed review of the proposal is warranted.

The California Department of Education has already developed a detailed process for school siting which is outlined in Appendix E. However, school districts may also find this section helpful when evaluating the most appropriate site for new schools in their area. At a minimum, using these questions may encourage school districts to engage throughout their siting process with land use agencies and local air districts. The combined expertise of these entities can be useful in devising relevant design standards and mitigation measures that can

reduce exposure to cumulative emissions, exposure, and health risk to students and school workers.

As indicated throughout the Handbook, we strongly encourage land use agencies to consult early and often with local air districts. Local air districts have the expertise, many of the analytical tools, and a working knowledge of the sources they regulate. It is also critical to fully involve the public and businesses that could be affected by the siting decision. The questions provided in the chart below do not imply any particular action should be taken by land use agencies. Rather the questions are intended to improve the assessment process and facilitate informed decision-making.

## ■ Project-Related Questions

This section includes project-related questions that, in conjunction with the questions in the next section, can be used to tailor the project evaluation. These questions are designed to help identify the potential for incompatible land uses from localized project impacts.

### Questions to Consider When Reviewing New Projects

Project-Related Questions	Cross-Reference to Relevant Handbook Sections
<p>1. Is the proposed project:</p> <ul style="list-style-type: none"> <li>▲ A business or commercial license renewal</li> <li>▲ A new or modified commercial project</li> <li>▲ A new or modified industrial project</li> <li>▲ A new or modified public facility project</li> <li>▲ A new or modified transportation project</li> <li>▲ A housing or other development in which sensitive individuals may live or play</li> </ul>	<p>See Appendix A for typical land use classifications and associated project categories that could emit air pollutants.</p>
<p>2. Does the proposed project:</p> <ul style="list-style-type: none"> <li>▲ Conform to the zoning designation?</li> <li>▲ Require a variance to the zoning designation?</li> <li>▲ Include plans to expand operations over the life of the business such that additional emissions may increase the pollution burden in the community (e.g., from additional truck operations, new industrial operations or process lines, increased hours of operation, build-out to the property line, etc.)?</li> </ul>	<p>See Appendix F for a general explanation of land use processes.</p> <p>In addition, Section 3 contains a discussion of how land use planning, zoning, and permitting practices can result in incompatible land uses or cumulative air pollution impacts.</p>
<p>3. Has the local air district provided comments or information to assist in the analysis?</p>	<p>See Section 5 and Appendix C for a description of air quality-related tools that the ARB and local air districts use to provide information on potential air pollution impacts.</p>
<p>4. Have public meetings been scheduled with the affected community to solicit their involvement in the decision-making process for the proposed project?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools.</p>
<p>5. If the proposed project will be subject to local air district regulations:</p> <ul style="list-style-type: none"> <li>▲ Has the project received a permit from the local air district?</li> <li>▲ Would it comply with applicable local air district requirements?</li> <li>▲ Is the local air district contemplating new regulations that would reduce emissions from the source over time?</li> <li>▲ Will potential emissions from the project</li> </ul>	<p>See Appendix C for a description of local air district programs.</p>

Project-Related Questions	Cross-Reference to Relevant Handbook Sections
<p>trigger the local air district's new source review for criteria pollutants or air toxics emissions?</p> <ul style="list-style-type: none"> <li>▲ Is the local air district expected to ask the proposed project to perform a risk assessment?</li> <li>▲ Is there sufficient new information or public concern to call for a more thorough environmental analysis of the proposed project?</li> <li>▲ Are there plans to expand operations over time?</li> <li>▲ Are there land-use based air quality significance thresholds or design standards that could be applied to this project in addition to applicable air district requirements?</li> </ul>	
<p>6. If the proposed project will release air pollution emissions, either directly or indirectly, but is not regulated by the local air district:</p> <ul style="list-style-type: none"> <li>▲ Is the local air district informed of the project?</li> <li>▲ Does the local air district believe that there could be potential air pollution impacts associated with this project category because of the proximity of the project to sensitive individuals?</li> <li>▲ If the project is one in which individuals live or play (e.g., a home, playground, convalescent home, etc.), does the local air district believe that the project's proximity to nearby sources could pose potential air pollution impacts?</li> <li>▲ Are there indirect emissions that could be associated with the project (e.g., truck traffic or idling, transport refrigeration unit operations, stationary diesel engine operations, etc.) that will be in close proximity to sensitive individuals?</li> <li>▲ Will the proposed project increase or serve as a magnet for diesel traffic?</li> <li>▲ Are there land-use based air quality significance thresholds or design standards that could be applied to this project in addition to applicable air district requirements?</li> <li>▲ Is there sufficient new information or public concern to call for a more thorough environmental analysis of the proposed project?</li> <li>▲ Should the site approval process include identification and mitigation of potential</li> </ul>	<p>See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p>

Project-Related Questions	Cross-Reference to Relevant Handbook Sections
direct or indirect emissions associated with the potential project?	
<p>7. Does the local air district or land use agency have pertinent information on the source, such as:</p> <ul style="list-style-type: none"> <li>▲ Available permit and enforcement data, including for the owner or operator of the proposed source that may have other sources in the State.</li> <li>▲ Proximity of the proposed project to sensitive individuals.</li> <li>▲ Number of potentially exposed individuals from the proposed project.</li> <li>▲ Potential for the proposed project to expose sensitive individuals to odor or other air pollution nuisances.</li> <li>▲ Meteorology or the prevailing wind patterns between the proposed project and the nearest receptor, or between the proposed sensitive receptor project and sources that could pose a localized or cumulative air pollution impact.</li> </ul>	<p>See Appendix C for a description of local air district programs.</p> <p>See Appendix B for a listing of useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts.</p> <p>Also, do not hesitate to contact your local air district regarding answers to any of these questions that might not be available at the land use agency.</p> <p>See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p>
<p>8. Based upon the project application, its location, and the nature of the source, could the proposed project:</p> <ul style="list-style-type: none"> <li>▲ Be a polluting source that is located in proximity to, or otherwise upwind, of a location where sensitive individuals live or play?</li> <li>▲ Attract sensitive individuals and be located in proximity to or otherwise downwind, of a source or multiple sources of pollution, including polluting facilities or transportation-related sources that contribute emissions either directly or indirectly?</li> <li>▲ Result in health risk to the surrounding community?</li> </ul>	<p>See Section 3 for a discussion of what is an incompatible land use and the potential cumulative air pollution impacts.</p> <p>See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p>
<p>9. If a CEQA categorical exemption is proposed, were the following questions considered:</p> <ul style="list-style-type: none"> <li>▲ Is the project site environmentally sensitive as defined by the project's location? (A project that is ordinarily insignificant in its impact on the environment may in a particularly sensitive environment be significant.)</li> <li>▲ Would the project and successive future projects of the same type in the approximate location potentially result in cumulative impacts?</li> <li>▲ Are there "unusual circumstances" creating the possibility of significant effects?</li> </ul>	<p>See CEQA Guidelines section 15300, and Public Resources Code, section 21084.</p> <p>See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p> <p>See also Section 5 and Appendix C for a description of air quality-related tools that the ARB and local air districts use to provide information on potential air pollution impacts.</p>

## ■ Questions Related to Cumulative Impact Assessment

The following questions can be used to provide the decision-maker with a better understanding of the potential for cumulative air pollution impacts to an affected community. Answers to these questions will help to determine if new projects or activities warrant a more detailed review. It may also help to see potential environmental concerns from the perspective of the affected community. Additionally, responses can provide local decision-makers with information with which to assess the best policy options for addressing neighborhood-scale air pollution concerns.

The questions below can be used to identify whether existing tools and procedures are adequate to address land use-related air pollution issues. This process can also be used to pinpoint project characteristics that may have the greatest impact on community-level emissions, exposure, and risk. Such elements can include: the compliance record of existing sources including those owned or operated by the project proponent; the concentration of emissions from polluting sources within the approximate area of sensitive sites; transportation circulation in proximity to the proposed project; compatibility with the General Plan and General Plan elements; etc.

The local air district can provide useful assistance in the collection and evaluation of air quality-related information for some of the questions and should be consulted early in the process.

### Questions Related to Cumulative Impact Assessment

Technical Questions	Cross-Reference to Relevant Handbook Sections
1. Is the community home to industrial facilities?	See Appendix A for typical land use classifications and associated project categories that could emit air pollutants.
2. Do one or more major freeways or high-traffic volume surface streets cut through the community?	See transportation circulation element of your general plan. See also Appendix B for useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts.  See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).
3. Is the area classified for mixed-use zoning?	See your general plan and zoning ordinances.
4. Is there an available list of air pollution sources in the community?	Contact your local air district.
5. Has a walk-through of the community been conducted to gather the following information:	See Appendix B for a listing of useful information that land use agencies

Technical Questions	Cross-Reference to Relevant Handbook Sections
<ul style="list-style-type: none"> <li>▲ Corroborate available information on land use activities in the area (e.g., businesses, housing developments, sensitive individuals, etc.)?</li> <li>▲ Determine the proximity of existing and anticipated future projects to residential areas or sensitive individuals?</li> <li>▲ Determine the concentration of emission sources (including anticipated future projects) to residential areas or sensitive individuals?</li> </ul>	<p>should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts. Also contact your local air district.</p>
<p>6. Has the local air district been contacted to obtain information on sources in the community?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools.</p>
<p>7. What categories of commercial establishments are currently located in the area and does the local air district have these sources on file as being regulated or permitted?</p>	<p>See Appendix A for typical land use classifications and associated project categories that could emit air pollutants. Also contact your local air district.</p>
<p>8. What categories of indirect sources such as distribution centers or warehouses are currently located in the area?</p>	<p>See Appendix A for typical land use classifications and associated project categories that emit air pollutants.</p>
<p>9. What air quality monitoring data are available?</p>	<p>Contact your local air district.</p>
<p>10. Have any risk assessments been performed on emission sources in the area?</p>	<p>Contact your local air district.</p>
<p>11. Does the land use agency have the capability of applying a GIS spatial mapping tool that can overlay zoning, sub-development information, and other neighborhood characteristics, with air pollution and transportation data?</p>	<p>See Appendix B for a listing of useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts. Also contact your local air district for tools that can be used to supplement available land use agency tools.</p>
<p>12. Based on available information, is it possible to determine if the affected community or neighborhood experiences elevated health risk due to a concentration of air pollution sources in close proximity, and if not, can the necessary information be obtained?</p>	<p>Contact your local air district. Also see Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p>
<p>13. Does the community have a history of chronic complaints about air quality?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools. Also contact your local air district.</p>
<p>14. Is the affected community included in the public participation process for the agency's decision?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools.</p>
<p>15. Have community leaders or groups been contacted about any pre-existing or chronic community air quality concerns?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools. Also contact your local air district.</p>



## ■ Mitigation Approaches

In addition to considering the suitability of the project location, opportunities for mitigation of air pollution impacts should be considered. Sometimes, a land use agency may find that selection of a different project location to avoid a health risk is not feasible. When that happens, land use agencies should consider design improvements or other strategies that would reduce the risk. Such strategies could include performance or design standards, consultation with local air districts and other agencies on appropriate actions that these agencies should, or plan to, undertake, and consultation and outreach in the affected community. Potential mitigation measures should be feasible, cost-effective solutions within the available resources and authority of implementing agencies to enforce.<sup>12</sup>

## ■ Conditional Use Permits and Performance Standards

Some types of land uses are only allowed upon approval of a conditional use permit (also called a CUP or special use permit). A conditional use permit does not re-zone the land but specifies conditions under which a particular land use will be permitted. Such land uses could be those with potentially significant environmental impacts. Local zoning ordinances specify the uses for which a conditional use permit is required, the zones they may be allowed in, and public hearing procedures. The conditional use permit imposes special requirements to ensure that the use will not be detrimental to its surroundings.

In the context of land use planning, performance standards are requirements imposed on projects or project categories through conditional use permits to ensure compliance with general plan policies and local ordinances. These standards could apply to such project categories as distribution centers, very large gas dispensing facilities, autobody shops, dry cleaners, and metal platers. Land use agencies may wish to consider adding land use-based performance standards to zoning ordinances in existing mixed-use communities for certain air pollution project categories. Such standards would provide certainty and equitable treatment to all projects of a similar nature, and reserve the more resource intensive conditional or special use permits to projects that require a more detailed analysis. In developing project design or performance standards, land use agencies should consult with the local air district. Early and regular consultation can avoid duplication or inconsistency with local air district control requirements when considering the site-specific design and operation of a project.

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<sup>12</sup> A land use agency has the authority to condition or deny a project based upon information collected and evaluated through the land use decision-making process. However, any denial would need to be based upon identifiable, generally applicable, articulated standards set forth in the local government's General Plan and zoning codes. One way of averting this is to conduct early and regular outreach to the community and the local air district so that community and environmental concerns can be addressed and accommodated into the project proposal.

Examples of land use-based air quality-specific performance standards include the following:

- Placing a process vent away from the direction of the local playground that is nearby or increasing the stack height so that emissions are dispersed to reduce the emissions impact on surrounding homes or schools.
- Setbacks between the project fence line and the population center.
- Limiting the hours of operation of a facility to avoid excess emissions exposure or foul odors to nearby individuals.
- An ordinance that requires fleet operators to use cleaner vehicles before project approval (if a new business), or when expanding the fleet (if an existing business); and
- Providing alternate routes for truck operations that discourage detours into residential neighborhoods.

### **Outreach to Other Agencies**

When questions arise regarding the air quality impacts of projects, including potential cumulative impacts, land use agencies should consult the local air district. Land use agencies should also consider the following suggestions to avoid creating new incompatible land uses:

- Consult with the local air district to help determine if emissions from a particular project will adversely impact sensitive individuals in the area, if existing or future effective regulations or permit requirements will affect the proposed project or other sources in the vicinity of the proposed project, or if additional inspections should be required.
- Check with ARB for new information and modeling tools that can help evaluate projects seeking to site within your jurisdiction.
- Become familiar with ARB's Land Use-Air Quality Linkage Report to determine whether approaches and evaluation tools contained in the Report can be used to reduce transportation-related impacts on communities.
- Contact and collaborate with other state agencies that play a role in the land use decision-making process, e.g., the State Department of Education, the California Energy Commission, and Caltrans. These agencies have information on mitigation measures and mapping tools that could be useful in addressing local problems.

### **■ Information Clearinghouse**

- Land use agencies can refer to the ARB statewide electronic information clearinghouse for information on what measures other jurisdictions are using to address comparable issues or sources.<sup>13</sup>

<sup>13</sup> This information can be accessed from ARB's website by going to:  
<http://www.arb.ca.gov/ch/clearinghouse.htm>

The next section addresses available air quality assessment tools that land use agencies can use to evaluate the potential for localized or cumulative impacts in their communities.

## **5. Available Tools to Evaluate Cumulative Air Pollution Emissions and Risk**

Until recently, California has traditionally approached air pollution control from the perspective of assessing whether the pollution was regional, category-specific, or from new or existing sources. This methodology has been generally effective in reducing statewide and regional air pollution impacts and risk levels. However, such an incremental, category-by-category, source-by-source approach may not always address community health impacts from multiple sources - including mobile, industrial, and commercial facilities.

As a result of air toxics and children's health concerns over the past several years, ARB and local air districts have begun to develop new tools to evaluate and inform the public about cumulative air pollution impacts at the community level. One aspect of ARB's programs now underway is to consolidate and make accessible air toxics emissions and monitoring data by region, using modeling tools and other analytical techniques to take a preliminary look at emissions, exposure, and health risk in communities.

ARB has developed multiple tools to assist local air districts perform assessments of cumulative emissions, exposure, and risk on a neighborhood scale. These tools include:

- Regional risk maps that show trends in potential cancer risk from toxic air pollutants in southern and central California between 1990 and 2010. These maps are based on the U.S. EPA's ASPEN model. These maps provide an estimate of background levels of toxic air pollutant risk but are not detailed enough to assess individual neighborhoods or facilities.<sup>14</sup>
- The Community Health Air Pollution Information System (CHAPIS) is a user-friendly, Internet-based system for displaying information on emissions from sources of air pollution in an easy to use mapping format. CHAPIS contains information on air pollution emissions from selected large facilities and small businesses that emit criteria and toxic air pollutants. It also contains information on air pollution emissions from motor vehicles. When released in 2004, CHAPIS did not contain information on every source of air pollution or every air pollutant. However, ARB continues to work with local air districts to include all of the largest air pollution sources and those with the highest documented air pollution risk. Additional facilities will be added to CHAPIS as more data become available.<sup>15</sup>

<sup>14</sup> For further information on these maps, please visit ARB's website at:  
<http://www.arb.ca.gov/toxics/cti/hlthrisk/hlthrisk.htm>

<sup>15</sup> For further information on CHAPIS, please click on:  
<http://www.arb.ca.gov/ch/chapis1/chapis1.htm>

- The Hot Spots Analysis and Reporting Program (HARP) is a software database package that evaluates emissions from one or more facilities to determine the overall health risk posed by the facility(-ies) on the surrounding community. Proper use of HARP ensures that the risk assessment meets the latest risk assessment guidelines published by the State Office of Environmental Health Hazard Assessment (OEHHA). HARP is designed with air quality professionals in mind and is available from the ARB.
- The Urban Emissions Model (URBEMIS) is a computer program that can be used to estimate emissions associated with land development projects in California such as residential neighborhoods, shopping centers, office buildings, and construction projects. URBEMIS uses emission factors available from the ARB to estimate vehicle emissions associated with new land uses.

Local air districts, and others can use these tools to assess a new project, or plan revision. For example, these tools can be used to:

- Identify if there are multiple sources of air pollution in the community;
- Identify the major sources of air pollution in the area under consideration;
- Identify the background potential cancer risk from toxic air pollution in the area under consideration;
- Estimate the risk from a new facility and how it adds to the overall risk from other nearby facilities; and
- Provide information to decision-makers and key stakeholders on whether there may be significant issues related to cumulative emissions, exposure, and health risk due to a permitting or land use decision.

If an air agency wishes to perform a cumulative air pollution impact analysis using any of these tools, it should consult with the ARB and/or the local air district to obtain information or assistance on the data inputs and procedures necessary to operate the program. In addition, land use agencies could consult with local air districts to determine the availability of land use and air pollution data for entry into an electronic Geographical Information System (GIS) format. GIS is an easier mapping tool than the more sophisticated models described in Appendix C. GIS mapping makes it possible to superimpose land use with air pollution information so that the spatial relationship between air pollution sources, sensitive receptors, and air quality can be visually represented. Appendix C provides a general description of the impact assessment process and micro-scale, or community level modeling tools that are available to evaluate potential cumulative air pollution impacts. Modeling protocols will be accessible on ARB's website as they become available. The ARB will also provide land use agencies and local air districts with statewide regional modeling results and information regarding micro-scale modeling.

## **6. ARB Programs to Reduce Air Pollution in Communities**

ARB's regulatory programs reduce air pollutant emissions through statewide strategies that improve public health in all California communities. ARB's overall program addresses motor vehicles, consumer products, air toxics, air-quality planning, research, education, enforcement, and air monitoring. Community health and environmental justice concerns are a consideration in all these programs. ARB's programs are statewide but recognize that extra efforts may be needed in some communities due to historical mixed land-use patterns, limited participation in public processes in the past, and a greater concentration of air pollution sources in some communities.

ARB's strategies are intended to result in better air quality and reduced health risk to residents throughout California. The ARB's priority is to prevent or reduce the public's exposure to air pollution, including from toxic air contaminants that pose the greatest risk, particularly to infants and children who are more vulnerable to air pollution.

In October 2003, ARB updated its statewide control strategy to reduce emissions from source categories within its regulatory authority. A primary focus of the strategy is to achieve federal and state air quality standards for ozone and particulate matter throughout California, and to reduce health risk from diesel PM. Along with local air districts, ARB will continue to address air toxics emissions from regulated sources (see Table 6-1 for a summary of ARB activities). As indicated earlier, ARB will also provide analytical tools and information to land use agencies and local air districts to help assess and mitigate cumulative air pollution impacts.

The ARB will continue to consider the adoption of or revisions to needed air toxics control measures as part of the state's ongoing air toxics assessment program.<sup>16</sup>

As part of its effort to reduce particulate matter and air toxics emissions from diesel PM, the ARB has developed a Diesel Risk Reduction Program<sup>17</sup> that lays out several strategies in a three-pronged approach to reduce emissions and their associated risk:

- Stringent emission standards for all new diesel-fueled engines;
- Aggressive reductions from in-use engines; and
- Low sulfur fuel that will reduce PM and still provide the quality of diesel fuel needed to control diesel PM.

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<sup>16</sup> For continuing information and updates on state measures, the reader can refer to ARB's website at <http://www.arb.ca.gov/toxics/toxics.htm>.

<sup>17</sup> For a comprehensive description of the program, please refer to ARB's website at <http://www.arb.ca.gov/diesel/dieselrrp.htm>.

**Table 6-1**  
**ARB ACTIONS TO ADDRESS**  
**CUMULATIVE AIR POLLUTION IMPACTS IN COMMUNITIES**

**Information Collection**

- Improve emission inventories, air monitoring data, and analysis tools that can help to identify areas with high cumulative air pollution impacts
- Conduct studies in coordination with OEHHA on the potential for cancer and non-cancer health effects from air pollutants emitted by specific source categories
- Establish web-based clearinghouse for local land use strategies

**Emission Reduction Approaches (2004-2006)\***

- Through a public process, consider development and/or amendment of regulations and related guidance to reduce emissions, exposure, and health risk at a statewide and local level for the following sources:
  - Diesel PM sources such as stationary diesel engines, transport refrigeration units, portable diesel engines, on-road public fleets, off-road public fleets, heavy-duty diesel truck idling, harbor craft vessels, waste haulers
  - Other air toxics sources, such as formaldehyde in composite wood products, hexavalent chromium for chrome plating and chromic acid anodizing, thermal spraying, and perchloroethylene dry cleaning
- Develop technical information for the following:\*
  - Distribution centers
  - Modeling tools such as HARP and CHAPIS
- Adopt rules and pollution prevention initiatives within legal authority to reduce emissions from mobile sources and fuels, and consumer products
- Develop and maintain Air Quality Handbook as a tool for use by land use agencies and local air districts to address cumulative air pollution impacts

**Other Approaches**

- Establish guidelines for use of statewide incentive funding for high priority mobile source emission reduction projects

\*Because ARB will continue to review the need to adopt or revise statewide measures, the information contained in this chart will be updated on an ongoing basis.

A number of ARB's diesel risk reduction strategies have been adopted. These include measures to reduce emissions from refuse haulers, urban buses, transport refrigeration units, stationary and portable diesel engines, and idling trucks and school buses. These sources are all important from a community perspective.<sup>18</sup>

<sup>18</sup> The reader can refer to ARB's website for information on its mobile source-related programs at: <http://www.arb.ca.gov/msprog/msprog.htm>, as well as regulations adopted and under consideration as part of the Diesel Risk Reduction Program at: <http://www.arb.ca.gov/diesel/dieselrrp.htm>

The ARB will continue to evaluate the health effects of air pollutants while implementing programs with local air districts to reduce air pollution in all California communities.

Local air districts also have ambitious programs to reduce criteria pollutants and air toxics from regulated sources in their region. Many of these programs also benefit air quality in local communities as well as in the broader region. For more information on what is being done in your area to reduce cumulative air pollution impacts through air pollution control programs, you should contact your local air district.<sup>19</sup>

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<sup>19</sup> Local air district contacts can be found on the inside cover to this Handbook.



## **7. Ways to Enhance Meaningful Public Participation**

Community involvement is an important part of the land use process. The public is entitled to the best possible information about the air they breathe and what is being done to prevent or reduce unhealthful air pollution in their communities. In particular, information on how land use decisions can affect air pollution and public health should be made accessible to all communities, including low-income and minority communities.

Effective community participation consistently relies on a two-way flow of information – from public agencies to community members about opportunities, constraints, and impacts, and from community members back to public officials about needs, priorities, and preferences. The outreach process needed to build understanding and local neighborhood involvement requires data, methodologies, and formats tailored to the needs of the specific community. More importantly, it requires the strong collaboration of local government agencies that review and approve projects and land uses to improve the physical and environmental surroundings of the local community.

Many land use agencies, especially those in major metropolitan areas, are familiar with, and have a long-established public review process. Nevertheless, public outreach can often be improved. Active public involvement requires engaging the public in ways that do not require their previous interest in or knowledge of the land use or air pollution control requirements, and a commitment to taking action where appropriate to address the concerns that are raised.

### **■ Direct Community Outreach**

In conjunction with local air districts, land use agencies should consider designing an outreach program for community groups, other stakeholders, and local government agency staffs that address the problem of cumulative air pollution impacts, and the public and government role in reducing them. Such a program could consider analytical tools that assist in the preparation and presentation of information in a way that supports sensible decision-making and public involvement. Table 7-1 contains some general outreach approaches that might be considered.

**Table 7-1**  
**Public Participation Approaches**

- Staff and community leadership awareness training on environmental justice programs and community-based issues
- Surveys to identify the website information needs of interested community-based organizations and other stakeholders
- Information materials on local land use and air district authorities
- Community-based councils to facilitate and invite resident participation in the planning process
- Neighborhood CEQA scoping sessions that allows for community input prior to technical analysis
- Public information materials on siting issues are under review including materials written for the affected community, and in different media that widens accessibility
- Public meetings
- Identify other opportunities to include community-based organizations in the process

To improve outreach, local land use agencies should consider the following activities:

- Hold meetings in communities affected by agency programs, policies, and projects at times and in places that encourage public participation, such as evenings and weekends at centrally located community meeting rooms, libraries, and schools.
- Assess the need for and provide translation services at public meetings.
- Hold community meetings to update residents on the results of any special air monitoring programs conducted in their neighborhood.
- Hold community meetings to discuss and evaluate the various options to address cumulative impacts in their community.
- In coordination with local air districts, make staff available to attend meetings of community organizations and neighborhood groups to listen to and, where appropriate, act upon community concerns.
- Establish a specific contact person for environmental justice issues.
- Increase student and community awareness of local government land use activities and policies through outreach opportunities.
- Make air quality and land use information available to communities in an easily understood and useful format, including fact sheets, mailings, brochures, public service announcements, and web pages, in English and other languages.
- On the local government web-site, dedicate a page or section to what the land use program is doing regarding environmental justice and cumulative environmental impacts, and, as applicable, activities conducted with local air districts such as neighborhood air monitoring studies, pollution prevention, air pollution sources in neighborhoods, and risk reduction.

- Allow, encourage, and promote community access to land use activities, including public meetings, General Plan or Community Plan updates, zoning changes, special studies, CEQA reviews, variances, etc.
  - Distribute information in multiple languages, as needed, on how to contact the land use agency or local air district to obtain information and assistance regarding environmental justice programs, including how to participate in public processes.
  - Create and distribute a simple, easy-to-read, and understandable public participation handbook, which may be based on the "Public Participation Guidebook" developed by ARB.
- **Other Opportunities for Meaningful Public Outreach**
- Community-Based Planning Committees

Neighborhood-based or community planning advisory councils could be established to invite and facilitate direct resident participation into the planning process. With the right training and technical assistance, such councils can provide valuable input and a forum for the review of proposed amendments to plans, zone changes, land use permits, and suggestions as to how best to prevent or reduce cumulative air pollution impacts in their community.

- Regional Partnerships

Consider creating regional coalitions of key growth-related organizations from both the private and public sectors, with corporations, communities, other jurisdictions, and government agencies. Such partnerships could facilitate agreement on common goals and win-win solutions tailored specifically for the region. With this kind of dialogue, shared vision, and collaboration, barriers can be overcome and locally acceptable sustainable solutions implemented. Over the long term, such strategies will help to bring about clean air in communities as well as regionally.

# APPENDIX A

## LAND USE CLASSIFICATIONS AND ASSOCIATED FACILITY CATEGORIES THAT COULD EMIT AIR POLLUTANTS

(1) Land Use Classifications – by Activity <sup>i</sup>	(2) Facility or Project Examples	(3) Key Pollutants <sup>ii,iii</sup>	(4) Air Pollution Permits <sup>iv</sup>
<b>COMMERCIAL/LIGHT INDUSTRIAL: SHOPPING, BUSINESS, AND COMMERCIAL</b>			
▲ Primarily retail shops and stores, office, commercial activities, and light industrial or small business	Dry cleaners; drive-through restaurants; gas dispensing facilities; auto body shops; metal plating shops; photographic processing shops; textiles; apparel and furniture upholstery; leather and leather products; appliance repair shops; mechanical assembly cleaning; printing shops	VOCs, air toxics, including diesel PM, NOx, CO, SOx	Limited; Rules for applicable equipment
▲ Goods storage or handling activities, characterized by loading and unloading goods at warehouses, large storage structures, movement of goods, shipping, and trucking.	Warehousing; freight-forwarding centers; drop-off and loading areas; distribution centers	VOCs, air toxics, including diesel PM, NOx, CO, SOx	No <sup>v</sup>
<b>LIGHT INDUSTRIAL: RESEARCH AND DEVELOPMENT</b>			
▲ Medical waste at research hospitals and labs	Incineration; surgical and medical instrument manufacturers, pharmaceutical manufacturing, biotech research facilities	Air toxics, NOx, CO, SOx	Yes
▲ Electronics, electrical apparatus, components, and accessories	Computer manufacturer; integrated circuit board manufacturer; semi-conductor production	Air toxics, VOCs	Yes
▲ College or university lab or research center	Medical waste incinerators; lab chemicals handling, storage and disposal	Air toxics, NOx, CO, SOx, PM10	Yes
▲ Research and development labs	Satellite manufacturer; fiber-optics manufacturer; defense contractors; space research and technology; new vehicle and fuel testing labs	Air toxics, VOCs	Yes
▲ Commercial testing labs	Consumer products; chemical handling, storage and disposal	Air toxics, VOCs	Yes

# APPENDIX A

(1) Land Use Classifications – by Activity <sup>i</sup>	(2) Facility or Project Examples	(3) Key Pollutants <sup>ii,iii</sup>	(4) Air Pollution Permits <sup>iv</sup>
<b>INDUSTRIAL: NON-ENERGY-RELATED</b>			
▲ Assembly plants, manufacturing facilities, industrial machinery	Adhesives; chemical; textiles; apparel and furniture upholstery; clay, glass, and stone products production; asphalt materials; cement manufacturers, wood products; paperboard containers and boxes; metal plating; metal and canned food product fabrication; auto manufacturing; food processing; printing and publishing; drug, vitamins, and pharmaceuticals; dyes; paints; pesticides; photographic chemicals; polish and wax; consumer products; metal and mineral smelters and foundries; fiberboard; floor tile and cover; wood and metal furniture and fixtures; leather and leather products; general industrial and metalworking machinery; musical instruments; office supplies; rubber products and plastics production; saw mills; solvent recycling; shingle and siding; surface coatings	VOCs, air toxics, including diesel PM, NOx, PM, CO, SOx	Yes
<b>INDUSTRIAL: ENERGY AND UTILITIES</b>			
▲ Water and sewer operations	Pumping stations; air vents; treatment	VOCs, air toxics, NOx, CO, SOx, PM10	Yes
▲ Power generation and distribution	Power plant boilers and heaters; portable diesel engines; gas turbine engines	NOx, diesel PM, NOx, CO, SOx, PM10, VOCs	Yes
▲ Refinery operations	Refinery boilers and heaters; coke cracking units; valves and flanges; flares	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Yes
▲ Oil and gas extraction	Oil recovery systems; uncovered wells	NOx, diesel PM, VOCs, CO, SOx, PM10	Yes
▲ Gasoline storage, transmission, and marketing	Above and below ground storage tanks; floating roof tanks; tank farms; pipelines	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Yes
▲ Solid and hazardous waste treatment, storage, and disposal activities	Landfills; methane digester systems; process recycling facility for concrete and asphalt materials	VOCs, air toxics, NOx, CO, SOx, PM10	Yes
<b>CONSTRUCTION (NON-TRANSPORTATION)</b>			
	Building construction; demolition sites	PM (re-entrained road dust), asbestos, diesel PM, NOx, CO, SOx, PM10, VOCs	Limited; state and federal off-road equipment standards

# APPENDIX A

(1) Land Use Classifications – by Activity <sup>i</sup>	(2) Facility or Project Examples	(3) Key Pollutants <sup>ii,iii</sup>	(4) Air Pollution Permits <sup>iv</sup>
<b>DEFENSE</b>			
	Ordnance and explosives demolition; range and testing activities; chemical production; degreasing; surface coatings; vehicle refueling; vehicle and engine operations and maintenance	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Limited; prescribed burning; equipment and solvent rules
<b>TRANSPORTATION</b>			
▲ Vehicular movement	Residential area circulation systems; parking and idling at parking structures; drive-through establishments; car washes; special events; schools; shopping malls, etc.	VOCs, NOx, PM (re-entrained road dust) air toxics e.g., benzene, diesel PM, formaldehyde, acetaldehyde, 1,3 butadiene, CO, SOx, PM10	No
▲ Road construction and surfacing	Street paving and repair; new highway construction and expansion	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	No
▲ Trains	Railroads; switch yards; maintenance yards	VOCs, NOx, CO, SOx, PM10, air toxics, including diesel PM	Limited; Applicable state and federal MV standards, and possible equipment rules
▲ Marine and port activities	Recreational sailing; commercial marine operations; hotelling operations; loading and un-loading; servicing; shipping operations; port or marina expansion; truck idling		
▲ Aircraft	Takeoff, landing, and taxiing; aircraft maintenance; ground support activities		
▲ Mass transit and school buses	Bus repair and maintenance		
<b>NATURAL RESOURCES</b>			
▲ Farming operations	Agricultural burning; diesel operated engines and heaters; small food processors; pesticide application; agricultural off-road equipment	Diesel PM, VOCs, NOx, PM10, CO, SOx, pesticides	Limited <sup>vi</sup> ; Agricultural burning requirements, applicable state and federal mobile source standards; pesticide rules
▲ Livestock and dairy operations	Dairies and feed lots	Ammonia, VOCs, PM10	Yes <sup>vii</sup>
▲ Logging	Off-road equipment e.g., diesel fueled chippers, brush hackers, etc.	Diesel PM, NOx, CO, SOx, PM10, VOCs	Limited; Applicable state/federal mobile source standards
▲ Mining operations	Quarrying or stone cutting; mining; drilling or dredging	PM10, CO, SOx, VOCs, NOx, and asbestos in some geographical areas	Applicable equipment rules and dust controls

## APPENDIX A

(1) Land Use Classifications – by Activity <sup>i</sup>	(2) Facility or Project Examples	(3) Key Pollutants <sup>ii,iii</sup>	(4) Air Pollution Permits <sup>iv</sup>
<b>RESIDENTIAL</b>			
Housing	Housing developments; retirement developments; affordable housing	Fireplace emissions (PM10, NOx, VOCs, CO, air toxics); Water heater combustion (NOx, VOCs, CO)	No <sup>vii</sup>
<b>ACADEMIC AND INSTITUTIONAL</b>			
▲ Schools, including school-related recreational activities	Schools; school yards; vocational training labs/classrooms such as auto repair/painting and aviation mechanics	Air toxics	Yes/No <sup>viii</sup>
▲ Medical waste	Incineration	Air toxics, NOx, CO, PM10	Yes
▲ Clinics, hospitals, convalescent homes		Air toxics	Yes

<sup>i</sup> These classifications were adapted from the American Planning Association's "Land Based Classification Standards." The Standards provide a consistent model for classifying land uses based on their characteristics. The model classifies land uses by refining traditional categories into multiple dimensions, such as activities, functions, building types, site development character, and ownership constraints. Each dimension has its own set of categories and subcategories. These multiple dimensions allow users to have precise control over land-use classifications. For more information, the reader should refer to the Association's website at <http://www.planning.org/LBCS/GeneralInfo/>.

<sup>ii</sup> This column includes key criteria pollutants and air toxic contaminants that are most typically associated with the identified source categories.

Additional information on specific air toxics that are attributed to facility categories can be found in ARB's Emission Inventory Criteria and Guidelines Report for the Air Toxics Hot Spots Program (May 15, 1997). This information can be viewed at ARB's web site at <http://www.arb.ca.gov/ab2588/final96/guide96.pdf>.

Criteria air pollutants are those air pollutants for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Criteria pollutants include ozone (formed by the reaction of volatile organic compounds and nitrogen oxides in the presence of sunlight), particulate matter, nitrogen dioxide, sulfur dioxide, carbon monoxide, and lead.

Volatile organic compounds (VOCs) combine with nitrogen oxides to form ozone, as well as particulate matter. VOC emissions result primarily from incomplete fuel combustion and the evaporation of chemical solvents and fuels. On-road mobile sources are the largest contributors to statewide VOC emissions. Stationary sources of VOC emissions include processes that use solvents (such as dry-cleaning, degreasing, and coating operations) and petroleum-related processes (such as petroleum refining, gasoline marketing and dispensing, and oil and gas extraction). Areawide VOC sources include consumer products, pesticides, aerosols and paints, asphalt paving and roofing, and other evaporative emissions.

Nitrogen oxides (NOx) are a group of gaseous compounds of nitrogen and oxygen, many of which contribute to the formation of ozone and particulate matter. Most NOx emissions are produced by the combustion of fuels. Mobile sources make up about 80 percent of the total statewide NOx emissions. Mobile sources include on-road vehicles and trucks, aircraft, trains, ships, recreational boats, industrial and construction equipment, farm

equipment, off-road recreational vehicles, and other equipment. Stationary sources of NOx include both internal and external combustion processes in industries such as manufacturing, food processing, electric utilities, and petroleum refining. Areawide source, which include residential fuel combustion, waste burning, and fires, contribute only a small portion of the total statewide NOx emissions, but depending on the community, may contribute to a cumulative air pollution impact.

Particulate matter (PM) refers to particles small enough to be breathed into the lungs (under 10 microns in size). It is not a single substance, but a mixture of a number of highly diverse types of particles and liquid droplets. It can be formed directly, primarily as dust from vehicle travel on paved and unpaved roads, agricultural operations, construction and demolition.

Carbon monoxide (CO) is a colorless and odorless gas that is directly emitted as a by-product of combustion. The highest concentrations are generally associated with cold stagnant weather conditions that occur during winter. CO problems tend to be localized.

An Air Toxic Contaminant (air toxic) is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. Similar to criteria pollutants, air toxics are emitted from stationary, areawide, and mobile sources. They contribute to elevated regional and localized risks near industrial and commercial facilities and busy roadways. The ten compounds that pose the greatest statewide risk are: acetaldehyde; benzene; 1,3-butadiene; carbon tetrachloride; diesel particulate matter (diesel PM); formaldehyde; hexavalent chromium; methylene chloride; para-dichlorobenzene; and perchloroethylene. The risk from diesel PM is by far the largest, representing about 70 percent of the known statewide cancer risk from outdoor air toxics. The exhaust from diesel-fueled engines is a complex mixture of gases, vapors, and particles, many of which are known human carcinogens. Diesel PM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute about 26 percent of statewide diesel PM emissions, with an additional 72 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and other equipment. Stationary engines in shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations contribute about two percent of statewide emissions. However, when this number is disaggregated to a sub-regional scale such as neighborhoods, the risk factor can be far greater.

<sup>iii</sup> The level of pollution emitted is a major determinant of the significance of the impact.

<sup>iv</sup> Indicates whether facility activities listed in column 4 are generally subject to local air district permits to operate. This does not include regulated products such as solvents and degreasers that may be used by sources that may not require an operating permit per se, e.g., a gas station or dry cleaner.

<sup>v</sup> Generally speaking, warehousing or distribution centers are not subject to local air district permits. However, depending on the district, motor vehicle fleet rules may apply to trucks or off-road vehicles operated and maintained by the facility operator. Additionally, emergency generators or internal combustion engines operated on the site may require an operating permit.

<sup>vi</sup> Authorized by recent legislation SB700.

<sup>vii</sup> Local air districts do not require permits for woodburning fireplaces inside private homes. However, some local air districts and land use agencies do have rules or ordinances that require new housing developments or home re-sales to install U.S. EPA -certified stoves. Some local air districts also ban residential woodburning during weather inversions that concentrate smoke in residential areas. Likewise, home water heaters are not subject to permits; however, new heaters could be subject to emission limits that are imposed by federal or local agency regulations.

<sup>viii</sup> Technical training schools that conduct activities normally permitted by a local air district could be subject to an air permit.



**LAND USE-BASED REFERENCE TOOLS TO EVALUATE  
NEW PROJECTS FOR POTENTIAL AIR POLLUTION IMPACTS**

Land use agencies generally have a variety of tools and approaches at hand, or accessible from local air districts that can be useful in performing an analysis of potential air pollution impacts associated with new projects. These tools and approaches include:

- Base map of the city or county planning area and terrain elevations.
- General Plan designations of land use (existing and proposed).
- Zoning maps.
- Land use maps that identify existing land uses, including the location of facilities that are permitted or otherwise regulated by the local air district. Land use agencies should consult with their local air district for information on regulated facilities.
- Demographic data, e.g., population location and density, distribution of population by income, distribution of population by ethnicity, and distribution of population by age. The use of population data is a normal part of the planning process. However, from an air quality perspective, socioeconomic data is useful to identify potential community health and environmental justice issues.
- Emissions, monitoring, and risk-based maps created by the ARB or local air districts that show air pollution-related health risk by community across the state.
- Location of public facilities that enhance community quality of life, including parks, community centers, and open space.
- Location of industrial and commercial facilities and other land uses that use hazardous materials, or emit air pollutants. These include chemical storage facilities, hazardous waste disposal sites, dry cleaners, large gas dispensing facilities, auto body shops, and metal plating and finishing shops.
- Location of sources or facility types that result in diesel on-road and off-road emissions, e.g., stationary diesel power generators, forklifts, cranes, construction equipment, on-road vehicle idling, and operation of transportation refrigeration units. Distribution centers, marine terminals and ports, rail yards, large industrial facilities, and facilities that handle bulk goods are all examples of complex facilities where these types of emission sources are frequently concentrated.<sup>1</sup> Very large facilities, such as ports, marine terminals, and airports, could be analyzed regardless of proximity to a receptor if they are within the modeling area.
- Location and zoning designations for existing and proposed schools, buildings, or outdoor areas where sensitive individuals may live or play.
- Location and density of existing and proposed residential development.
- Zoning requirements, property setbacks, traffic flow requirements, and idling restrictions for trucks, trains, yard hostlers<sup>2</sup>, construction equipment, or school buses.
- Traffic counts (including diesel truck traffic counts), within a community to validate or augment existing regional motor vehicle trip and speed data.

<sup>1</sup> The ARB is currently evaluating the types of facilities that may act as complex point sources and developing methods to identify them.

<sup>2</sup> Yard hostler means a tractor less than 300 horsepower that is used to transfer semi-truck or tractor-trailer containers in and around storage, transfer, or distribution yards or areas and is often equipped with a hydraulic lifting fifth wheel for connection to trailer containers.

## APPENDIX C

### ARB AND LOCAL AIR DISTRICT INFORMATION AND TOOLS CONCERNING CUMULATIVE AIR POLLUTION IMPACTS

It is the ARB's policy to support research and data collection activities toward the goal of reducing cumulative air pollution impacts. These efforts include updating and improving the air toxics emissions inventory, performing special air monitoring studies in specific communities, and conducting a more complete assessment of non-cancer health effects associated with air toxics and criteria pollutants.<sup>1</sup> This information is important because it helps us better understand links between air pollution and the health of sensitive individuals -- children, the elderly, and those with pre-existing serious health problems affected by air quality.

ARB is working with CAPCOA and OEHHA to improve air pollutant data and evaluation tools to determine when and where cumulative air pollution impacts may be a problem. The following provides additional information on this effort.

#### **How are emissions assessed?**

Detailed information about the sources of air pollution in an area is collected and maintained by local air districts and the ARB in what is called an emission inventory. Emission inventories contain information about the nature of the business, the location, type and amount of air pollution emitted, the air pollution-producing processes, the type of air pollution control equipment, operating hours, and seasonal variations in activity. Local districts collect emission inventory data for most stationary source categories.

Local air districts collect air pollution emission information directly from facilities and businesses that are required to obtain an air pollution operating permit. Local air districts use this information to compile an emission inventory for areas within their jurisdiction. The ARB compiles a statewide emission inventory based on the information collected by the ARB and local air districts. Local air districts provide most of the stationary source emission data, and ARB provides mobile source emissions as well as some areawide emission sources such as consumer products and paints. ARB is also developing map-based tools that will display information on air pollution sources.

Criteria pollutant data have been collected since the early 1970's, and toxic pollutant inventories began to be developed in the mid-1980's.

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<sup>1</sup> A criteria pollutant is any air pollutant for which EPA has established a National Ambient Air Quality Standard or for which California has established a State Ambient Air Quality Standard, including: carbon monoxide, lead, nitrogen oxides, ozone, particulates and sulfur oxides. Criteria pollutants are measured in each of California's air basins to determine whether the area meets or does not meet specific federal or state air quality standards. Air toxics or air toxic contaminants are listed pollutants recognized by California or EPA as posing a potential risk to health.

**How is the toxic emission inventory developed?**

Emissions data for toxic air pollutants is a high priority for communities because of concerns about potential health effects. Most of ARB's air toxics data is collected through the toxic "Hot Spots" program. Local air districts collect emissions data from industrial and commercial facilities. Facilities that exceed health-based thresholds are required to report their air toxics emissions as part of the toxic "Hot Spots" program and update their emissions data every four years. Facilities are required to report their air toxics emissions data if there is an increase that would trigger the reporting threshold of the hotspots program. Air toxics emissions from motor vehicles and consumer products are estimated by the ARB. These estimates are generally regional in nature, reflecting traffic and population.

The ARB also maintains chemical speciation profiles that can be used to estimate toxics emissions when no toxic emissions data is available.

**What additional toxic emissions information is needed?**

In order to assess cumulative air pollution impacts, updated information from individual facilities is needed. Even for sources where emissions data are available, additional information such as the location of emissions release points is often needed to better model cumulative impacts. In terms of motor vehicles, emissions data are currently based on traffic models that only contain major roads and freeways. Local traffic data are needed so that traffic emissions can be more accurately assigned to specific streets and roads. Local information is also needed for off-road emission sources, such as ships, trains, and construction equipment. In addition, hourly maximum emissions data are needed for assessing acute air pollution impacts.

**What work is underway?**

ARB is working with CAPCOA to improve toxic emissions data, developing a community health air pollution information system to improve access to emission information, conducting neighborhood assessment studies to better understand toxic emission sources, and conducting surveys of sources of toxic pollutants.

**How is air pollution monitored?**

While emissions data identify how much air pollution is going into the air, the state's air quality monitoring network measures air pollutant levels in outdoor air. The statewide air monitoring network is primarily designed to measure regional exposure to air pollutants, and consists of more than 250 air monitoring sites.

The air toxics monitoring network consists of approximately 20 permanent sites. These sites are supplemented by special monitoring studies conducted by ARB and local air districts. These sites measure approximately sixty toxic air pollutants. Diesel PM, which is the major driver of urban air toxic risk, is not monitored directly. Ten of the

60 toxic pollutants, not including diesel, account for most of the remaining potential cancer risk in California urban areas.

### **What additional monitoring has been done?**

Recently, additional monitoring has been done to look at air quality at the community level. ARB's community monitoring was conducted in six communities located throughout the state. Most sites were in low-income, minority communities located near major sources of air pollution, such as refineries or freeways. The monitoring took place for a year or more in each community, and included measurements of both criteria and toxic pollutants.

### **What is being learned from community monitoring?**

In some cases, the ARB or local air districts have performed air quality monitoring or modeling studies covering a particular region of the state. When available, these studies can give information about regional air pollution exposures.

The preliminary results of ARB's community monitoring are providing insights into air pollution at the community level. Urban background levels are a major contributor to the overall risk from air toxics in urban areas, and this urban background tends to mask the differences between communities. When localized elevated air pollutant levels were measured, they were usually associated with local ground-level sources of toxic pollutants. The most common source of this type was busy streets and freeways. The impact these ground-level sources had on local air quality decreased rapidly with distance from the source. Pollutant levels usually returned to urban background levels within a few hundred meters of the source.

These results indicate that tools to assess cumulative impacts must be able to account for both localized, near-source impacts, as well as regional background air pollution. The tools that ARB is developing for this purpose are air quality models.

### **How can air quality modeling be used?**

While air monitoring can directly measure cumulative exposure to air pollution, it is limited because all locations cannot be monitored. To address this, air quality modeling provides the capability to estimate exposure when air monitoring is not feasible. Air quality modeling can be refined to assess local exposure, identify locations of potential hot spots, and identify the relative contribution of emission sources to exposure at specific locations. The ARB has used this type of information to develop regional cumulative risk maps that estimate the cumulative cancer air pollution risk for most of California. While these maps only show one air pollution-related health risk, it does provide a useful starting point.

**What is needed for community modeling?**

Air quality models have been developed to assess near-source impacts, but they have very exacting data requirements. These near-source models estimate the impact of local sources, but do not routinely include the contribution from regional air pollution background. To estimate cumulative air pollution exposure at a neighborhood scale, a modeling approach needs to combine features of both micro-scale and regional models.

In addition, improved methods are needed to assess near-source impacts under light and variable wind conditions, when high local concentrations are more likely to occur. A method for modeling long-term exposure to air pollutants near freeways and other high traffic areas is also needed.

**What modeling work has ARB developed?**

A key component of ARB's Community Health Program is the Neighborhood Assessment Program (NAP). As described later in this section, the NAP studies are being conducted to better understand pollution impacts at the community level. Through two such studies conducted in Barrio Logan (San Diego) and Wilmington (Los Angeles), ARB is refining community-level modeling methodologies. Regional air toxics modeling is also being performed to better understand regional air pollution background levels.

In a parallel effort, ARB is developing modeling protocols for estimating cumulative emissions, exposure, and risk from air pollution. The protocols will cover modeling approaches and uncertainties, procedures for running the models, the development of statewide risk maps, and methods for estimating health risks. The protocols are subject to an extensive peer review process prior to release.

**How are air pollution impacts on community health assessed?**

On a statewide basis, ARB's toxic air contaminant program identifies and reduces public exposure to air toxics. The focus of the program has been on reducing potential cancer risk, because monitoring results show potential urban cancer risk levels are too high. ARB has also looked for potential non-cancer risks based on health reference levels provided by OEHHA. On a regional basis, the pollutants measured in ARB's toxic monitoring network are generally below the OEHHA non-cancer reference exposure levels.

As part of its community health program, the ARB is looking at potential cancer and non-cancer risk. This could include chronic or acute health effects. If the assessment work shows elevated exposures on a localized basis, ARB will work with OEHHA to assess the health impacts.

### **What tools has ARB developed to assess cumulative air pollution impacts?**

ARB has developed the following tools and reports to assist land use agencies and local air districts assess and reduce cumulative emissions, exposure, and risk on a neighborhood scale.

#### **Statewide Risk Maps**

ARB has produced regional risk maps that show the statewide trends for Southern and Central California in estimated potential cancer risk from air toxics between 1990 and 2010.<sup>2</sup> These maps will supplement U.S. EPA's ASPEN model and are available on the ARB's Internet site. These maps are best used to obtain an estimate of the regional background air pollution health risk and are not detailed enough to estimate the exact risk at a specific location.

ARB also has maps that focus in more detail on smaller areas that fall within the Southern and Central California regions for these same modeled years. The finest visual resolution available in the maps on this web site is two by two kilometers. These maps are not detailed enough to assess individual neighborhoods or facilities.

#### **Community Health Air Pollution Information System (CHAPIS)**

CHAPIS is an Internet-based procedure for displaying information on emissions from sources of air pollution in an easy to use mapping format. CHAPIS uses Geographical Information System (GIS) software to deliver interactive maps over the Internet. CHAPIS relies on emission estimates reported to the ARB's emission inventory database - California Emissions Inventory Development and Reporting System, or CEIDARS.

Through CHAPIS, air district staff can quickly and easily identify pollutant sources and emissions within a specified area. CHAPIS contains information on air pollution emissions from selected large facilities and small businesses that emit criteria and toxic air pollutants. It also contains information on air pollution emissions from motor vehicle and areawide emissions. CHAPIS does not contain information on every source of air pollution or every air pollutant. It is a major long-term objective of CHAPIS to include all of the largest air pollution sources and those with the highest documented air pollution risk. CHAPIS will be updated on a periodic basis and additional facilities will be added to CHAPIS as more data becomes available.

CHAPIS is being developed in stages to assure data quality. The initial release of CHAPIS will include facilities emitting 10 or more tons per year of nitrogen oxides, sulfur dioxide, carbon monoxide, PM10, or reactive organic gases; air toxics from refineries and power plants of 50 megawatts or more; and facilities that conducted health risk

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<sup>2</sup>ARB maintains state trends and local potential cancer risk maps that show statewide trends in potential inhalable cancer risk from air toxics between 1990 and 2010. This information can be viewed at ARB's web site at <http://www.arb.ca.gov/toxics/cti/hlthrisk/hlthrisk.htm>

assessments under the California Air Toxics "Hot Spots" Information and Assessment Program.<sup>3</sup>

CHAPIS can be used to identify the emission contributions from mobile, area, and point sources on that community.

### **"Hot Spots" Analysis and Reporting Program (HARP)**

HARP<sup>4</sup> is a software package available from the ARB and is designed with air quality professionals in mind. It models emissions and release data from one or more facilities to estimate the potential health risk posed by the selected facilities on the neighboring community. HARP uses the latest risk assessment guidelines published by OEHHA.

With HARP, a user can perform the following tasks:

- Create and manage facility databases;
- Perform air dispersion modeling;
- Conduct health risk analyses;
- Output data reports; and
- Output results to GIS mapping software.

HARP can model downwind concentrations of air toxics based on the calculated emissions dispersion at a single facility. HARP also has the capability of assessing the risk from multiple facilities, and for multiple locations of concern near those facilities. While HARP has the capability to assess multiple source impacts, there had been limited application of the multiple facility assessment function in the field at the time of HARP's debut in 2003. HARP can also evaluate multi-pathway, non-inhalation health risk resulting from air pollution exposure, including skin and soil exposure, and ingestion of meat and vegetables contaminated with air toxics, and other toxics that have accumulated in a mother's breast milk.

### **Neighborhood Assessment Program (NAP)**

The NAP<sup>5</sup> has been a key component of ARB's Community Health Program. It includes the development of tools that can be used to perform assessments of cumulative air pollution impacts on a neighborhood scale. The NAP studies have been done to better understand how air pollution affects individuals at the neighborhood level. Thus far, ARB has conducted neighborhood scale assessments in Barrio Logan and Wilmington.

As part of these studies, ARB is collecting data and developing a modeling protocol that can be used to conduct cumulative air pollution impact assessments. Initially these

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<sup>3</sup> California Health & Safety Code section 44300, et seq.

<sup>4</sup> More detailed information can be found on ARB's website at:  
<http://www.arb.ca.gov/toxics/harp/harp.htm>

<sup>5</sup> For more information on the Program, please refer to: <http://www.arb.ca.gov/ch/programs/nap/nap.htm>

## APPENDIX C

assessments will focus on cumulative inhalation cancer health risk and chronic non-cancer impacts. The major challenge is developing modeling methods that can combine both regional and localized air pollution impacts, and identifying the critical data necessary to support these models. The objective is to develop methods and tools from these studies that can ultimately be applied to other areas of the state. In addition, the ARB plans to use these methods to replace the ASPEN regional risk maps currently posted on the ARB Internet site.

### **Urban Emissions Model (URBEMIS)**

URBEMIS<sup>6</sup> is a computer program that can be used to estimate emissions associated with land development projects in California such as residential neighborhoods, shopping centers, office buildings, and construction projects. URBEMIS uses emission factors available from the ARB to estimate vehicle emissions associated with new land uses. URBEMIS estimates sulfur dioxide emissions from motor vehicles in addition to reactive organic gases, nitrogen oxides, carbon monoxide, and PM10.

### **Land-Use Air Quality Linkage Report<sup>7</sup>**

This report summarizes data currently available on the relationships between land use, transportation and air quality. It also highlights strategies that can help to reduce the use of the private automobile. It also briefly summarizes two ARB-funded research projects. The first project analyzes the travel patterns of residents living in five higher density, mixed use neighborhoods in California, and compares them to travel in more auto-oriented areas. The second study correlates the relationship between travel behavior and community characteristics, such as density, mixed land uses, transit service, and accessibility for pedestrians.

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<sup>6</sup> For more information on this model, please refer to ARB's website at <http://www.arb.ca.gov/html/soft.htm>.

<sup>7</sup> To access this report, please refer to ARB's website or click on: <http://www.arb.ca.gov/ch/programs/link97.pdf>



## LAND USE AND AIR QUALITY AGENCY ROLES IN THE LAND USE PROCESS

A wide variety of federal, state, and local government agencies are responsible for regulatory, planning, and siting decisions that can have an impact on air pollution. They include local land use agencies, regional councils of government, school districts, local air districts, ARB, the California Department of Transportation (Caltrans), and the Governor's Office of Planning and Research (OPR) to name a few. This Section will focus on the roles and responsibilities of local and state agencies. The role of school districts will be discussed in Appendix E.

### Local Land Use Agencies

Under the State Constitution, land use agencies have the primary authority to plan and control land use.<sup>1</sup> Each of California's incorporated cities and counties are required to adopt a comprehensive, long-term General Plan.<sup>2</sup>

The General Plan's long-term goals are implemented through zoning ordinances. These are local laws adopted by counties and cities that describe for specific areas the kinds of development that will be allowed within their boundaries.

Land use agencies are also the lead for doing environmental assessments under CEQA for new projects that may pose a significant environmental impact, or for new or revised General Plans.

### Local Agency Formation Commissions (LAFCOs)

Operating in each of California's 58 counties, LAFCOs are composed of local elected officials and public members who are responsible for coordinating changes in local governmental boundaries, conducting special studies that review ways to reorganize, simplify, and streamline governmental structures, and preparing a sphere of influence for each city and special district within each county. Each Commission's efforts are directed toward seeing that local government services are provided efficiently and economically while agricultural and open-space lands are protected. LAFCO decisions strive to balance the competing needs in California for efficient services, affordable housing, economic opportunity, and conservation of natural resources.

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<sup>1</sup> The legal basis for planning and land use regulation is the "police power" of the city or county to protect the public's health, safety and welfare. The California Constitution gives cities and counties the power to make and enforce all local police, sanitary and other ordinances and regulations not in conflict with general laws. State law reference: California Constitution, Article XI §7.

<sup>2</sup> OPR General Plan Guidelines, 2003:

[http://www.opr.ca.gov/planning/PDFs/General\\_Plan\\_Guidelines\\_2003.pdf](http://www.opr.ca.gov/planning/PDFs/General_Plan_Guidelines_2003.pdf)

## **Councils of Government (COG)**

COGs are organizations composed of local counties and cities that serve as a focus for the development of sound regional planning, including plans for transportation, growth management, hazardous waste management, and air quality. They can also function as the metropolitan planning organization for coordinating the region's transportation programs. COGs also prepare regional housing need allocations for updates of General Plan housing elements.

## **Local Air Districts**

Under state law, air pollution control districts or air quality management districts (local air districts) are the local government agencies responsible for improving air quality and are generally the first point of contact for resolving local air pollution issues or complaints. There are 35 local air districts in California<sup>3</sup> that have authority and primary responsibility for regional clean air planning. Local air districts regulate stationary sources of air pollutants within their jurisdiction including but not limited to industrial and commercial facilities, power plants, construction activities, outdoor burning, and other non-mobile sources of air pollution. Some local air districts also regulate public and private motor vehicle fleet operators such as public bus systems, private shuttle and taxi services, and commercial truck depots.

### **■ Regional Clean Air Plans**

Local air districts are responsible for the development and adoption of clean air plans that protect the public from the harmful effects of air pollution. These plans incorporate strategies that are necessary to attain ambient air quality standards. Also included in these regional air plans are ARB and local district measures to reduce statewide emissions from mobile sources, consumer products, and industrial sources.

### **■ Facility-Specific Considerations**

Permitting. In addition to the planning function, local air districts adopt and enforce regulations, issue permits, and evaluate the potential environmental impacts of projects.

Pollution is regulated through permits and technology-based rules that limit emissions from operating units within a facility or set standards that vehicle fleet operators must meet. Permits to construct and permits to operate contain very specific requirements and conditions that tell each regulated source what it must do to limit its air pollution in compliance with local air district rules, regulations, and state law. Prior to receiving a permit, new facilities must go through a New Source Review (NSR) process that establishes air pollution control requirements for the facility. Permit conditions are typically contained in the permit to operate and specify requirements that businesses must follow; these may include limits on the amount of pollution that can be emitted, the

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<sup>3</sup> Contact information for local air districts in California is listed in the front of this Handbook.

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type of pollution control equipment that must be installed and maintained, and various record-keeping requirements.

Local air districts also notify the public about new permit applications for major new facilities, or major modifications to existing facilities that seek to locate within 1,000 feet of a school.

Local air districts can also regulate other types of sources to reduce emissions. These include regulations to reduce emissions from the following sources:

- hazardous materials in products used by industry such as paints, solvents, and degreasers;
- agricultural and residential burning;
- leaking gasoline nozzles at service stations;
- public fleet vehicles such as sanitation trucks and school buses; and
- fugitive or uncontrolled dust at construction sites.

However, while emissions from industrial and commercial sources are typically subject to the permit authority of the local air district, sensitive sites such as a day care center, convalescent home, or playground are not ordinarily subject to an air permit. Local air district permits address the air pollutant emissions of a project but not its location.

Under the state's air toxics program, local air districts regulate air toxic emissions by adopting ARB air toxic control measures, or more stringent district-specific requirements, and by requiring individual facilities to perform a health risk assessment if emissions at the source exceed district-specific health risk thresholds<sup>4, 5</sup> (See the section on ARB programs for a more detailed summary of this program).

One approach by which local air districts regulate air toxics emissions is through the "Hot Spots" program.<sup>6</sup> The risk assessments submitted by the facilities under this

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<sup>4</sup> Cal/EPA's Office of Environmental Health Hazard Assessment has published "A Guide to Health Risk Assessment" for lay people involved in environmental health issues, including policymakers, businesspeople, members of community groups, and others with an interest in the potential health effects of toxic chemicals. To access this information, please refer to <http://www.oehha.ca.gov/pdf/HRSguide2001.pdf>

<sup>5</sup> Section 44306 of the California Health & Safety Code defines a health risk assessment as a detailed comprehensive analysis that a polluting facility uses to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations, and to assess and quantify both the individual and population-wide health risks associated with those levels of exposure.

<sup>6</sup> AB-2588 (the Air Toxics "Hot Spots" Information and Assessment Act) requires local air districts to prioritize facilities by high, intermediate, and low priority categories to determine which must perform a health risk assessment. Each district is responsible for establishing the prioritization score threshold at which facilities are required to prepare a health risk assessment. In establishing priorities for each facility, local air districts must consider the potency, toxicity, quantity, and volume of hazardous materials released from the facility, the proximity of the facility to potential receptors, and any other factors that the district determines may indicate that the facility may pose a significant risk. All facilities within the highest category must prepare a health risk assessment. In addition, each district may require facilities in the intermediate and low priority categories to also submit a health risk assessment.

**Table D-1**  
**Local Sources of Air Pollution, Responsible Agencies,**  
**and Associated Regulatory Programs**

Source	Examples	Primary Agency	Applicable Regulations
Large Stationary	Refineries, power plants, chemical facilities, certain manufacturing plants	Local air districts	Operating permit rules Air Toxics "Hot Spots" Law (AB 2588) Local district rules Air Toxic Control Measures (ATCMs)* New Source Review rules Title V permit rules
Small Stationary	Dry cleaners, auto body shops, welders, chrome plating facilities, service stations, certain manufacturing plants	Local air districts	Operating permit conditions, Air Toxics "Hot Spots" Law (AB 2588) Local district rules ATCMs* New Source Review rules
Mobile (non-fleet)	Cars, trucks, buses	ARB	Emission standards Cleaner-burning fuels (e.g., unleaded gasoline, low-sulfur diesel) Inspection and repair programs (e.g., Smog Check)
Mobile Equipment	Construction equipment	ARB, U.S. EPA	ARB rules U.S. EPA rules
Mobile (fleet)	Truck depots, school buses, taxi services	Local air districts, ARB	Local air district rules ARB urban bus fleet rule
Areawide	Paints and consumer products such as hair spray and spray paint	Local air district, ARB	ARB rules Local air district rules

\*ARB adopts ATCMs, but local air districts have the responsibility to implement and enforce these measures or more stringent ones.

program are reviewed by OEHHA and approved by the local air district. Risk assessments are available by contacting the local air district.

**Enforcement.** Local air districts also take enforcement action to ensure compliance with air quality requirements. They enforce air toxic control measures, agricultural and residential burning programs, gasoline vapor control regulations, laws that prohibit air pollution nuisances, visible emission limits, and many other requirements designed to

clean the air. Local districts use a variety of enforcement tools to ensure compliance. These include notices of violation, monetary penalties, and abatement orders. Under some circumstances, a permit may be revoked.

### ■ Environmental Review

As required by the California Environmental Quality Act (CEQA), local air districts also review and comment on proposed land use plans and development projects that can have a significant effect on the environment or public health.<sup>7</sup>

### California Air Resources Board

The ARB is the air pollution control agency at the state level that is responsible for the preparation of air plans required by state and federal law. In this regard, it coordinates the activities of all local air districts to ensure all statutory requirements are met and to reduce air pollution emissions for sources under its jurisdiction.

Motor vehicles are the single largest emissions source category under ARB's jurisdiction as well as the largest overall emissions source statewide. ARB also regulates emissions from other mobile equipment and engines as well as emissions from consumer products such as hair sprays, perfumes, cleaners, and aerosol paints.

### Air Toxics Program

Under state law, the ARB has a critical role to play in the identification, prioritization, and control of air toxic emissions. The ARB statewide comprehensive air toxics program was established in the early 1980's. The Toxic Air Contaminant Identification and Control Act of 1983 (AB 1807, Tanner 1983) created California's program to reduce exposure to air toxics.<sup>8</sup> The Air Toxics "Hot Spots" Information and Assessment Act (Hot Spots program) supplements the AB 1807 program, by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

Under AB 1807, the ARB is required to use certain criteria to prioritize the identification and control of air toxics. In selecting substances for review, the ARB must consider criteria relating to emissions, exposure, and health risk, as well as persistence in the atmosphere, and ambient concentrations in the community. AB 1807 also requires the ARB to use available information gathered from the Hot Spots program when prioritizing compounds.

The ARB identifies pollutants as toxic air contaminants and adopts statewide air toxic control measures (ATCMs). Once ARB adopts an ATCM, local air districts must

<sup>7</sup> Section 4 of this Handbook contains more information on the CEQA process.

<sup>8</sup> For a general background on California's air toxics program, the reader should refer to ARB's website at <http://www.arb.ca.gov/toxics/tac/appendxb.htm>.

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implement the measure, or adopt and implement district-specific measures that are at least as stringent as the state standard. Taken in the aggregate, these ARB programs will continue to further reduce emissions, exposure, and health risk statewide.

With regard to the land use decision-making process, ARB, in conjunction with local air districts, plays an advisory role by providing technical information on land use-related air issues.

### **Other Agencies**

#### *Governor's Office of Planning and Research (OPR)*

In addition to serving as the Governor's advisor on land use planning, research, and liaison with local government, OPR develops and implements the state's policy on land use planning and coordinates the state's environmental justice programs. OPR updated its General Plan Guidelines in 2003 to highlight the importance of sustainable development and environmental justice policies in the planning process. OPR also advises project proponents and government agencies on CEQA provisions and operates the State Clearinghouse for environmental and federal grant documents.

#### *California Department of Housing and Community Development*

The Department of Housing and Community Development (HCD) administers a variety of state laws, programs and policies to preserve and expand housing opportunities, including the development of affordable housing. All local jurisdictions must update their housing elements according to a staggered statutory schedule, and are subject to certification by HCD. In their housing elements, cities and counties are required to include a land inventory which identifies and zones sites for future residential development to accommodate a mix of housing types, and to remove barriers to the development of housing.

An objective of state housing element law is to increase the overall supply and affordability of housing. Other fundamental goals include conserving existing affordable housing, improving the condition of the existing housing stock, removing regulatory barriers to housing production, expanding equal housing opportunities, and addressing the special housing needs of the state's most vulnerable residents (frail elderly, disabled, large families with children, farmworkers, and the homeless).

#### *Transportation Agencies*

Transportation agencies can also influence mobile source-related emissions in the land use decision-making process. Local transportation agencies work with land use agencies to develop a transportation (circulation) element for the General Plan. These local government agencies then work with other transportation-related agencies, such as the Congestion Management Agency (CMA), Metropolitan Planning Organization

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(MPO), Regional Transportation Planning Agency (RTPA), and Caltrans to develop long and short range transportation plans and projects.

Caltrans is the agency responsible for setting state transportation goals and for state transportation planning, design, construction, operations and maintenance activities. Caltrans is also responsible for delivering California's multibillion-dollar state Transportation Improvement Program, a list of transportation projects that are approved for funding by the California Transportation Commission in a 4-year cycle.

When safety hazards or traffic circulation problems are identified in the existing road system, or when land use changes are proposed such as a new residential subdivision, shopping mall or manufacturing center, Caltrans and/or the local transportation agency ensure the projects meet applicable state, regional, and local goals and objectives.

Caltrans also evaluates transportation-related projects for regional air quality impacts, from the perspective of travel-related emissions as well as road congestion and increases in road capacity (new lanes).

### *California Energy Commission (CEC)*

The CEC is the state's CEQA lead agency for permitting large thermal power plants (50 megawatts or greater). The CEC works closely with local air districts and other federal, state and local agencies to ensure compliance with applicable laws, ordinances, regulations and standards in the permitting, construction, operation and closure of such plants. The CEC uses an open and public review process that provides communities with outreach and multiple opportunities to participate and be heard. In addition to its comprehensive environmental impact and engineering design assessment process, the CEC also conducts an environmental justice evaluation. This evaluation involves an initial demographic screening to determine if a qualifying minority or low-income population exists in the vicinity of the proposed project. If such a population is present, staff considers possible environmental justice impacts including from associated project emissions in its technical assessments.<sup>9</sup>

### *Department of Pesticides Regulation (DPR)*

Pesticides are industrial chemicals produced specifically for their toxicity to a target pest. They must be released into the environment to do their job. Therefore, regulation of pesticides focuses on using toxicity and other information to ensure that when pesticides are used according to their label directions, potential for harm to people and the environment is minimized. DPR imposes strict controls on use, beginning before pesticide products can be sold in California, with an extensive scientific program to ensure they can be used safely. DPR and county enforcement staff tracks the use of pesticides to ensure that pesticides are used properly. DPR collects periodic

<sup>9</sup> See California Energy Commission, "Environmental Performance Report," July 2001 at [http://www.energy.ca.gov/reports/2001-11-20\\_700-01-001.PDF](http://www.energy.ca.gov/reports/2001-11-20_700-01-001.PDF)

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measurements of any remaining amounts of pesticides in water, air, and on fresh produce. If unsafe levels are found, DPR requires changes in how pesticides are used, to reduce the possibility of harm. If this cannot be done - that is, if a pesticide cannot be used safely - use of the pesticide will be banned in California.<sup>10</sup>

### *Federal Agencies*

Federal agencies have permit authority over activities on federal lands and certain resources, which have been the subject of congressional legislation, such as air, water quality, wildlife, and navigable waters. The U.S. Environmental Protection Agency generally oversees implementation of the federal Clean Air Act, and has broad authority for regulating certain activities such as mobile sources, air toxics sources, the disposal of toxic wastes, and the use of pesticides. The responsibility for implementing some federal regulatory programs such as those for air and water quality and toxics is delegated by management to specific state and local agencies. Although federal agencies are not subject to CEQA they must follow their own environmental process established under the National Environmental Policy Act (NEPA).

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<sup>10</sup> For more information, the reader is encouraged to visit the Department of Pesticide Regulation web site at [www.cdpr.ca.gov/docs/emppm/pubs/tacmenu.htm](http://www.cdpr.ca.gov/docs/emppm/pubs/tacmenu.htm).



## SPECIAL PROCESSES THAT APPLY TO SCHOOL SITING

The California Education Code and the California Public Resources Code place primary authority for siting public schools with the local school district, which is the 'lead agency' for purposes of CEQA. The California Education Code requires public school districts to notify the local planning agency about siting a new public school or expanding an existing school. The planning agency then reports back to the school district regarding a project's conformity with the adopted General Plan. However, school districts can overrule local zoning and land use designations for schools if they follow specified procedures. In addition, all school districts must evaluate new school sites using site selection standards established in Section 14010 of Title 5 of the California Code of Regulations. Districts seeking state funding for school site acquisition must also obtain site approval from the California Department of Education.

Before making a final decision on a school site acquisition, a school district must comply with CEQA and evaluate the proposed site acquisition/new school project for air emissions and health risks by preparing and certifying an environmental impact report or negative declaration. Both the California Education Code section 17213 and the California Public Resources Code section 21151.8 require school districts to consult with administering agencies and local air districts when preparing the environmental assessment. Such consultation is required to identify both permitted and non-permitted "facilities" that might significantly affect health at the new site. These facilities include, but are not limited to, freeways and other busy traffic corridors, large agricultural operations, and rail yards that are within one-quarter mile of the proposed school site, and that might emit hazardous air emissions, or handle hazardous or acutely hazardous materials, substances, or waste.

As part of the CEQA process and before approving a school site, the school district must make a finding that either it found none of the facilities or significant air pollution sources, or alternatively, if the school district finds that there are such facilities or sources, it must determine either that they pose no significant health risks, or that corrective actions by another governmental entity would be taken so that there would be no actual or potential endangerment to students or school workers.

In addition, if the proposed school site boundary is within 500 feet of the edge of the closest traffic lane of a freeway or traffic corridor that has specified minimum average daily traffic counts, the school district is required to determine through specified risk assessment and air dispersion modeling that neither short-term nor long term exposure poses significant health risks to pupils.

State law changes effective January 1, 2004 (SB352, Escutia 2003, amending Education Code section 17213 and Public Resources Code section 21151.8) also provides for cases in which the school district cannot make either of those two findings and cannot find a suitable alternative site. When this occurs, the school district must adopt a statement of over-riding considerations, as part of an environmental impact

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report, that the project should be approved based on the ultimate balancing of the merits.

Some school districts use a standardized assessment process to determine the environmental impacts of a proposed school site. In the assessment process, school districts can use maps and other available information to evaluate risk, including a local air district's database of permitted source emissions. School districts can also perform field surveys and record searches to identify and calculate emissions from non-permitted sources within one-quarter mile radius of a proposed site. Traffic count data and vehicular emissions data can also be obtained from Caltrans for major roadways and freeways in proximity to the proposed site to model potential emissions impacts to students and school employees. This information is available from the local COG, Caltrans, or local cities and counties for non-state maintained roads.

## GENERAL PROCESSES USED BY LAND USE AGENCIES TO ADDRESS AIR POLLUTION IMPACTS

There are several separate but related processes for addressing the air pollution impacts of land use projects. One takes place as part of the planning and zoning function. This consists of preparing and implementing goals and policies contained in county or city General Plans, community or area plans, and specific plans governing land uses such as residential, educational, commercial, industrial, and recreational activities. It also includes recommending locations for thoroughfares, parks and other public improvements.

Land use agencies also have a permitting function that includes performing environmental reviews and mitigation when projects may pose a significant environmental impact. They conduct inspections for zoning permits issued, enforce the zoning regulations and issue violations as necessary, issue zoning certificates of compliance, and check compliance when approving certificates of occupancy.

### **Planning**

#### ■ **General Plan<sup>1</sup>**

The General Plan is a local government "blueprint" of existing and future anticipated land uses for long-term future development. It is composed of the goals, policies, and general elements upon which land use decisions are based. Because the General Plan is the foundation for all local planning and development, it is an important tool for implementing policies and programs beneficial to air quality. Local governments may choose to adopt a separate air quality element into their General Plan or to integrate air quality-beneficial objectives, policies, and strategies in other elements of the Plan, such as the land use, circulation, conservation, and community design elements.

More information on General Plan elements is contained in Appendix D.

#### ■ **Community Plans**

Community or area plans are terms for plans that focus on a particular region or community within the overall general plan area. It refines the policies of the general plan as they apply to a smaller geographic area and is implemented by ordinances and other discretionary actions, such as zoning.

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<sup>1</sup> In October 2003, OPR revised its General Plan Guidelines. An entire chapter is now devoted to a discussion of how sustainable development and environmental justice goals can be incorporated into the land use planning process. For further information, the reader is encouraged to obtain a copy of OPR's General Plan Guidelines, or refer to their website at:  
[http://www.opr.ca.gov/planning/PDFs/General\\_Plan\\_Guidelines\\_2003.pdf](http://www.opr.ca.gov/planning/PDFs/General_Plan_Guidelines_2003.pdf)

### ■ Specific Plan

A specific plan is a hybrid that can combine policies with development regulations or zoning requirements. It is often used to address the development requirements for a single project such as urban infill or a planned community. As a result, its emphasis is on concrete standards and development criteria.

### ■ Zoning

Zoning is the public regulation of the use of land. It involves the adoption of ordinances that divide a community into various districts or zones. For instance, zoning ordinances designate what projects and activities can be sited in particular locations. Each zone designates allowable uses of land within that zone, such as residential, commercial, or industrial. Zoning ordinances can address building development standards, e.g., minimum lot size, maximum building height, minimum building setback, parking, signage, density, and other allowable uses.

### Land Use Permitting

In addition to the planning and zoning function, land use agencies issue building and business permits, and evaluate the potential environmental impacts of projects. To be approved, projects must be located in a designated zone and comply with applicable ordinances and zoning requirements.

Even if a project is sited properly in a designated zone, a land use agency may require a new source to mitigate potential localized environmental impacts to the surrounding community below what would be required by the local air district. In this case, the land use agency could condition the permit by limiting or prescribing allowable uses including operating hour restrictions, building standards and codes, property setbacks between the business property and the street or other structures, vehicle idling restrictions, or traffic diversion.

Land use agencies also evaluate the environmental impacts of proposed land use projects or activities. If a project or activity falls under CEQA, the land use agency requires an environmental review before issuing a permit to determine if there is the potential for a significant impact, and if so, to mitigate the impact or possibly deny the project.

### ■ Land Use Permitting Process

In California, the authority to regulate land use is delegated to city and county governments. The local land use planning agency is the local government administrative body that typically provides information and coordinates the review of development project applications. Conditional Use Permits (CUP) typically fall within a land use agency's discretionary authority and therefore are subject to CEQA. CUPs are

intended to provide an opportunity to review the location, design, and manner of development of land uses prior to project approval. A traditional purpose of the CUP is to enable a municipality to control certain uses that could have detrimental environmental effects on the community.

The process for permitting new discretionary projects is quite elaborate, but can be broken down into five fundamental components:

- Project application
- Environmental assessment
- Consultation
- Public comment
- Public hearing and decision

### Project Application

The permit process begins when the land use agency receives a project application, with a detailed project description, and support documentation. During this phase, the agency reviews the submitted application for completeness. When the agency deems the application to be complete, the permit process moves into the environmental review phase.

### Environmental Assessment

If the project is discretionary and the application is accepted as complete, the project proposal or activity must undergo an environmental clearance process under CEQA and the CEQA Guidelines adopted by the California Resources Agency.<sup>2</sup> The purpose of the CEQA process is to inform decision-makers and the public of the potential significant environmental impacts of a project or activity, to identify measures to minimize or eliminate those impacts to the point they are no longer significant, and to discuss alternatives that will accomplish the project goals and objectives in a less environmentally harmful manner.

#### What is a "Lead Agency"?

A lead agency is the public agency that has the principal responsibility for carrying out or approving a project that is subject to CEQA. In general, the land use agency is the preferred public agency serving as lead agency because it has jurisdiction over general land uses. The lead agency is responsible for determining the appropriate environmental document, as well as its preparation.

#### What is a "Responsible Agency"?

A responsible agency is a public agency with discretionary approval authority over a portion of a CEQA project (e.g., projects requiring a permit). As a responsible agency, the agency is available to the lead agency and project proponent for early consultation on a project to apprise them of applicable rules and regulations, potential adverse impacts, alternatives, and mitigation measures, and provide guidance as needed on applicable methodologies or other related issues.

#### What is a "Commenting Agency"?

A commenting agency is any public agency that comments on a CEQA document, but is neither a lead agency nor a responsible agency. For example, a local air district, as the agency with the responsibility for comprehensive air pollution control, could review and comment on an air quality analysis in a CEQA document for a proposed distribution center, even though the project was not subject to a permit or other pollution control requirements.

<sup>2</sup> Projects and activities that may have a significant adverse impact on the environment are evaluated under CEQA Guidelines set forth in title 14 of the California Code of Regulations, sections 15000 et seq.

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To assist the lead agency in determining whether the project or activity may have a significant effect that would require the preparation of an EIR, the land use agency may consider criteria, or thresholds of significance, to assess the potential impacts of the project, including its air quality impacts. The land use agency must consider any credible evidence in addition to the thresholds, however, in determining whether the project or activity may have a significant effect that would trigger the preparation of an EIR.

The screening criteria to determine significance is based on a variety of factors, including local, state, and federal regulations, administrative practices of other public agencies, and commonly accepted professional standards. However, the final determination of significance for individual projects is the responsibility of the lead agency. In the case of land use projects, the lead agency would be the City Council or County Board of Supervisors.

A new land use plan or project can also trigger an environmental assessment under CEQA if, among other things, it will expose sensitive sites such as schools, day care centers, hospitals, retirement homes, convalescence facilities, and residences to substantial pollutant concentrations.<sup>3</sup>

CEQA only applies to "discretionary projects." Discretionary means the public agency must exercise judgment and deliberation when deciding to approve or disapprove a particular project or activity, and may append specific conditions to its approval. Examples of discretionary projects include the issuance of a CUP, re-zoning a property, or widening of a public road. Projects that are not subject to the exercise of agency discretion, and can therefore be approved administratively through the application of set standards are referred to as ministerial projects. CEQA does not apply to ministerial projects.<sup>4</sup> Examples of typical ministerial projects include the issuance of most building permits or a business license.

Once a potential environmental impact associated with a project is identified through an environmental assessment, mitigation must be considered. A land use agency should incorporate mitigation measures that are suggested by the local air district as part of the project review process.

### Consultation

Application materials are provided to various departments and agencies that may have an interest in the project (e.g., air pollution, building, police, fire, water agency, Fish and Game, etc.) for consultation and input.

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<sup>3</sup> Readers interested in learning more about CEQA should contact OPR or visit their website at <http://www.opr.ca.gov/>.

<sup>4</sup> See California Public Resources Code section 21080(b)(1).

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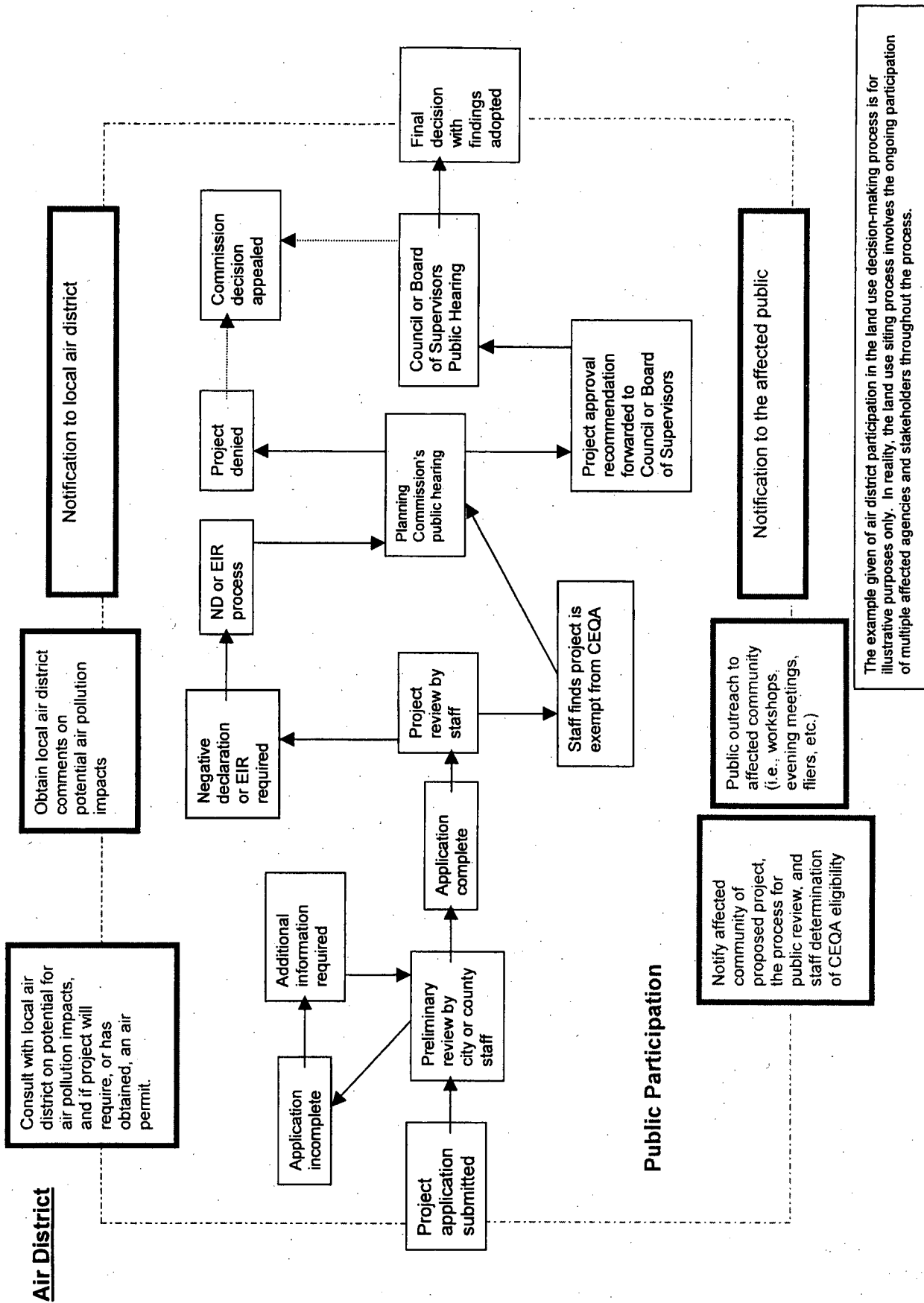
### Public Comment

Following the environmental review process, the Planning Commission reviews application along with the staff's report on the project assessment and a public comment period is set and input is solicited.

### Public Hearing and Decision

Permit rules vary depending on the particular permit authority in question, but the process generally involves comparing the proposed project with the land use agency standards or policies. The procedure usually leads to a public hearing, which is followed by a written decision by the agency or its designated officer. Typically, a project is approved, denied, or approved subject to specified conditions.

**USE PERMIT (DISCRETIONARY ACTION) REVIEW PROCESS\***





## GLOSSARY OF KEY AIR POLLUTION TERMS

**Air Pollution Control Board or Air Quality Management Board:** Serves as the governing board for local air districts. It consists of appointed or elected members from the public or private sector. It conducts public hearings to adopt local air pollution regulations.

**Air Pollution Control Districts or Air Quality Management Districts (local air district):** A county or regional agency with authority to regulate stationary and area sources of air pollution within a given county or region. Governed by a district air pollution control board.

**Air Pollution Control Officer (APCO):** Head of a local air pollution control or air quality management district.

**Air Toxic Control Measures (ATCM):** A control measure adopted by the ARB (Health and Safety Code section 39666 et seq.), which reduces emissions of toxic air contaminants.

**Ambient Air Quality Standards:** An air quality standard defines the maximum amount of a pollutant that can be present in the outdoor air during a specific time period without harming the public's health. Only U.S. EPA and the ARB may establish air quality standards. No other state has this authority. Air quality standards are a measure of clean air. More specifically, an air quality standard establishes the concentration at which a pollutant is known to cause adverse health effects to sensitive groups within the population, such as children and the elderly. Federal standards are referred to as National Ambient Air Quality Standards (NAAQS); state standards are referred to as California ambient air quality standards (CAAQS).

**Area-wide Sources:** Sources of air pollution that individually emit small amounts of pollution, but together add up to significant quantities of pollution. Examples include consumer products, fireplaces, road dust, and farming operations.

**Attainment vs. Nonattainment Area:** An attainment area is a geographic area that meets the National Ambient Air Quality Standards for the criteria pollutants and a non-attainment area is a geographic area that doesn't meet the NAAQS for criteria pollutants.

**Attainment Plan:** Attainment plans lay out measures and strategies to attain one or more air quality standards by a specified date.

**California Clean Air Act (CCAA):** A California law passed in 1988, which provides the basis for air quality planning and regulation independent of federal regulations. A major element of the Act is the requirement that local air districts in violation of the CAAQS

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must prepare attainment plans which identify air quality problems, causes, trends, and actions to be taken to attain and maintain California's air quality standards by the earliest practicable date.

**California Environmental Quality Act (CEQA):** A California law that sets forth a process for public agencies to make informed decisions on discretionary project approvals. The process helps decision-makers determine whether any potential, significant, adverse environmental impacts are associated with a proposed project and to identify alternatives and mitigation measures that will eliminate or reduce such adverse impacts.<sup>1</sup>

**California Health and Safety Code:** A compilation of California laws, including state air pollution laws, enacted by the Legislature to protect the health and safety of people in California. Government agencies adopt regulations to implement specific provisions of the California Health and Safety Code.

**Clean Air Act (CAA):** The federal Clean Air Act was adopted by the United States Congress and sets forth standards, procedures, and requirements to be implemented by the U.S. Environmental Protection Agency (U.S. EPA) to protect air quality in the United States.

**Councils of Government (COGs):** There are 25 COGs in California made up of city and county elected officials. COGs are regional agencies concerned primarily with transportation planning and housing; they do not directly regulate land use.

**Criteria Air Pollutant:** An air pollutant for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Examples include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM10 and PM2.5. The term "criteria air pollutants" derives from the requirement that the U.S. EPA and ARB must describe the characteristics and potential health and welfare effects of these pollutants. The U.S. EPA and ARB periodically review new scientific data and may propose revisions to the standards as a result.

**District Hearing Board:** Hears local air district permit appeals and issues variances and abatement orders. The local air district board appoints the members of the hearing board.

**Emission Inventory:** An estimate of the amount of pollutants emitted into the atmosphere from mobile, stationary, area-wide, and natural source categories over a specific period of time such as a day or a year.

**Environmental Impact Report (EIR):** The public document used by a governmental agency to analyze the significant environmental effects of a proposed project, to identify

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<sup>1</sup> To track the submittal of CEQA documents to the State Clearinghouse within the Office of Planning and Research, the reader can refer to CEQAnet at <http://www.ceqanet.ca.gov>.

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alternatives, and to disclose possible ways to reduce or avoid the possible negative environmental impacts.

**Environmental Justice:** California law defines environmental justice as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies (California Government Code sec.65040.12(c)).

**General Plans:** A statement of policies developed by local governments, including text and diagrams setting forth objectives, principles, standards, and plan proposals for the future physical development of the city or county.

**Hazardous Air Pollutants (HAPs):** An air pollutant listed under section 112 (b) of the federal Clean Air Act as particularly hazardous to health. U.S. EPA identifies emission sources of hazardous air pollutants, and emission standards are set accordingly. In California, HAPs are referred to as toxic air contaminants.

**Land Use Agency:** Local government agency that performs functions associated with the review, approval, and enforcement of general plans and plan elements, zoning, and land use permitting. For purposes of this Handbook, a land use agency is typically a local planning department.

**Mobile Source:** Sources of air pollution such as automobiles, motorcycles, trucks, off-road vehicles, boats, and airplanes.

**National Ambient Air Quality Standard (NAAQS):** A limit on the level of an outdoor air pollutant established by the US EPA pursuant to the Clean Air Act. There are two types of NAAQS. Primary standards set limits to protect public health and secondary standards set limits to protect public welfare.

**Negative Declaration (ND):** When the lead agency (the agency responsible for preparing the EIR or ND) under CEQA, finds that there is no substantial evidence that a project may have a significant environmental effect, the agency will prepare a "negative declaration" instead of an EIR.

**New Source Review (NSR):** A federal Clean Air Act requirement that state implementation plans must include a permit review process, which applies to the construction and operation of new or modified stationary sources in nonattainment areas. Two major elements of NSR to reduce emissions are best available control technology requirements and emission offsets.

**Office of Planning and Research (OPR):** OPR is part of the Governor's office. OPR has a variety of functions related to local land-use planning and environmental programs. It provides General Plan Guidelines for city and county planners, and coordinates the state clearinghouse for Environmental Impact Reports.

## APPENDIX G

**Ordinance:** A law adopted by a City Council or County Board of Supervisors. Ordinances usually amend, repeal or supplement the municipal code; provide zoning specifications; or appropriate money for specific purposes.

**Overriding Considerations:** A ruling made by the lead agency in the CEQA process when the lead agency finds the importance of the project to the community outweighs potential adverse environmental impacts.

**Public Comment:** An opportunity for the general public to comment on regulations and other proposals made by government agencies. You can submit written or oral comments at the public meeting or send your written comments to the agency.

**Public Hearing:** A public hearing is an opportunity to testify on a proposed action by a governing board at a public meeting. The public and the media are welcome to attend the hearing and listen to, or participate in, the proceedings.

**Public Notice:** A public notice identifies the person, business, or local government seeking approval of a specific course of action (such as a regulation). It describes the activity for which approval is being sought, and describes the location where the proposed activity or public meeting will take place.

**Public Nuisance:** A public nuisance, for the purposes of air pollution regulations, is defined as a discharge from any source whatsoever of such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. (Health and Safety Code section 41700).

**Property Setback:** In zoning parlance, a setback is the minimum amount of space required between a lot line and a building line.

**Risk:** For cancer health effects, risk is expressed as an estimate of the increased chances of getting cancer due to facility emissions over a 70-year lifetime. This increase in risk is expressed as chances in a million (e.g., 10 chances in a million).

**Sensitive Individuals:** Refers to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality).

**Sensitive Sites or Sensitive Land Uses:** Land uses where sensitive individuals are most likely to spend time, including schools and schoolyards, parks and playgrounds, day care centers, nursing homes, hospitals, and residential communities.

**Setback:** An area of land separating one parcel of land from another that acts to soften or mitigate the effects of one land use on the other.

## APPENDIX G

**State Implementation Plan (SIP):** A plan prepared by state and local agencies and submitted to U.S. EPA describing how each area will attain and maintain national ambient air quality standards. SIPs include the technical information about emission inventories, air quality monitoring, control measures and strategies, and enforcement mechanisms. A SIP is composed of local air quality management plans and state air quality regulations.

**Stationary Sources:** Non-mobile sources such as power plants, refineries, and manufacturing facilities.

**Toxic Air Contaminant (TAC):** An air pollutant, identified in regulation by the ARB, which may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health. TACs are considered under a different regulatory process (California Health and Safety Code section 39650 et seq.) than pollutants subject to State Ambient Air Quality Standards. Health effects associated with TACs may occur at extremely low levels. It is often difficult to identify safe levels of exposure, which produce no adverse health effects.

**Urban Background:** The term is used in this Handbook to represent the ubiquitous, elevated, regional air pollution levels observed in large urban areas in California.

**Zoning ordinances:** City councils and county boards of supervisors adopts zoning ordinances that set forth land use classifications, divides the county or city into land use zones as delineated on the official zoning, maps, and set enforceable standards for future develop

Estimated Annual Property Tax Distribution  
North Plaza Drive Industrial Park

	Note 1			Note 2			Note 3			Note 4		
	Current (Frozen)			Annexation			Land Improvements			Build Out		
	Rate	Revenue		Rate	Revenue		Rate	Revenue		Rate	Revenue	
County	20.0%	14,400		15.9%	25,848		15.9%	122,679		15.9%	526,539	
Fire	4.9%	3,528		0.0%	3,528		0.0%	3,528		0.0%	3,528	
Visalia City	0.0%	0		10.2%	7,344		10.2%	69,462		10.2%	328,542	
ERAF	22.0%	15,840		22.0%	31,680		22.0%	165,660		22.0%	724,460	
All Others	53.1%	38,232		51.9%	75,600		51.9%	391,671		51.9%	1,709,931	
Total	100.0%	72,000		100.0%	144,000		100.0%	753,000		100.0%	3,293,000	

Note 1: Current Assessed Value (AV) (outside city)

480 gross acres	
15,000 per acre	
<u>7,200,000</u> Total AV	
<u>72,000</u> Annual Tax Revenue (rounded)	

Note 2: Projected AV upon annexation (inside city)

480 gross acres	
30,000 per acre	
<u>14,400,000</u> Total AV	
<u>144,000</u> Annual Tax Revenue (rounded)	

Note 3: Projected AV upon land improvements (street improvements per Note 5, including installation of utilities)

480 gross acres	
90% conversion to net acres (see Note 5)	
432 net acres	
174,240 per acre (\$4 per sq ft)	
<u>75,271,680</u> Total AV	
<u>753,000</u> Annual Tax Revenue (rounded)	

Note 4: Projected AV upon build out

480 gross acres	
90% conversion to net acres (see Note 5)	
432 net acres	
25% conversion to building pad	
108 net acres	
3,049,200 per acre (\$70 per sq ft)	
<u>329,313,600</u> Total AV	
<u>3,293,000</u> Annual Tax Revenue (rounded)	

Note 5: Conversion to net acres to account for half width street improvements on perimeter of each 160 acre section plus an interior cul-de-sac to service minimum 10 acre parcels

Note 6: Projected annual revenues were computed by freezing the existing tax allocation (Note 1) and then adding the increase due to annexation, improvements and build out using the new allocation %. No inflation assumptions have been incorporated.

# Does "Smart Growth" Matter to Public Finance?

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**Abstract.** This paper addresses four fundamental questions about the relationship between "smart growth," a fiscally motivated anti-sprawl policy movement, and public finance: Do low-density, spatially extensive land use patterns cost more to support? If so, how large of an influence does sprawl actually have? How does the influence differ among types of spending? And, how does it compare to the influence of other relevant factors? The analysis, which is based on the entire continental United States and uses a series of spatial econometric models to evaluate one aggregate (total direct) and nine disaggregate (education, fire protection, housing and community development, libraries, parks and recreation, police protection, roadways, sewerage, and solid waste disposal) measures of spending, provides the most detailed evidence to date of how sprawl affects the vast sum of revenue that local governments spend every year.

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