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AIR QUALITY HANDBOOK ON LAND USE

California Air Resources Board

October 2003

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A Preface and Acknowledgment will be inserted in the final draft.

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Purpose

Land use agencies can play an important role in helping to improve air quality in California communities. These local government agencies make critical decisions regarding individual projects as well as adopting plans that will shape the future. While the Air Resources Board (ARB) and local air pollution control districts (local air districts) are primarily responsible for programs to improve air quality, land use agencies can help by ensuring appropriate project location, design, and mitigation of adverse impacts.

Local government land use policies and plans assist county and city decision-makers in guiding future development by advocating a long-term, comprehensive approach to planning which balances the diverse needs of its citizens. Land use planning agencies strive to achieve these goals in a number of ways. These include:

- Providing decision-makers and the public with accurate information with which to make informed decisions;
- Improving the quality of life by protecting the environment and local communities while balancing the need for economic vitality;
- Collaborating with other agencies to achieve public goals; and
- Ensuring community involvement in the decision-making process.

As land use agencies carry out their responsibilities, it is important to recognize that land use decisions can have a direct impact on community exposures to air pollution, affecting public health and the quality of life. The results of these decisions can be positive or negative from an air quality perspective. For example, there are now incompatible land uses in some communities due to historic land use and zoning practices. The primary purpose of this handbook is to avoid such situations – providing the opportunity for a positive public health outcome.

Key decisions involving air quality often relate to the proximity of emission sources to the nearby public, the concentration of air pollution sources in a particular area, and decisions that affect allowable land uses. To be effective, the decision-making process should address not just large industrial facilities, but also small, commercial businesses such as dry cleaners and gas stations. Additionally, “indirect” sources of air pollution should be addressed. Examples are transportation corridors, warehouses, and distribution centers that contribute to air pollution through increased traffic -- both cars and trucks.

Land use decisions that can pose a public health risk are often the result of where a land use agency allows a new project to be sited. Even the best available control technology, some air pollution sources should not be sited very close to homes, schools, and other places where public exposures would be high. It is also important to consider the appropriateness of a new project’s location in light of existing air pollution impacts in the community. In general terms, this is often referred to as the issue of “cumulative impacts.” ARB is working with air pollution control districts to better define

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these situations and make the information more readily available to land use agencies. This handbook discusses the sources and mechanisms for obtaining this type of information.

ARB wants to work with land use agencies and local air districts to improve the information available to local decision-makers in order to prevent or reduce the air pollution impacts of new projects in all communities. Development of an air quality handbook for land use agencies is also a specific action included in the ARB's environmental justice policies. These policies also recognize that access to information and meaningful participation by community members is an important part of the decision-making process.

Based on what we know today about air quality impacts related to land use, this handbook focuses on two fundamental considerations related to new project siting: (1) the proximity of new emission sources to homes, schools, and other sensitive locations, and (2) the concentration of air pollution sources or projects in an area. We also discuss how land use development policies can play a role in preventing future air quality problems.

This Air Quality Handbook on Land Use (Air Quality Handbook, or Handbook) builds upon earlier efforts to implement the 1988 California Clean Air Act. Among other things, the California Clean Air Act called upon local air districts to focus particular attention on reducing emissions from transportation sources, including those sources that indirectly cause emissions by attracting vehicle trips. Such indirect sources include shopping centers, schools and universities, employment centers, medical offices, and other facilities. The 1997 ARB report, "The Land Use-Air Quality Linkage" summarizes available data on the relationships between land use, transportation, and air quality. The report highlights strategies that can help to reduce the use of single occupancy automobile use. Such strategies complement ARB regulatory programs that to continue reduce motor vehicle emissions.

Much of this Handbook focuses on land use decisions related to stationary (e.g., industrial or commercial) sources of air pollution. However, mobile sources (e.g., cars, trucks, trains, and ships) are the largest overall contributors to the State's air pollution problems, and air pollution from these sources represents 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 particulate matter (diesel PM), benzene, and 1,3-butadiene, all of which are primarily emitted by motor vehicles.

Over the past decade, ARB's actions have resulted in large reductions in motor vehicle emissions. Diesel PM emissions have decreased approximately 40 percent since 1990, and our goal is to decrease emissions by an additional 75 percent between 2000 and 2010 with new proposed regulations and stricter emission control requirements. In addition, California has seen a decrease in measured benzene emissions from air quality monitors of more than 70 percent since 1990 through actions such as improved

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fuel formulations and reduced vehicle exhaust emissions. At the State level, ARB continues to pursue new strategies to further reduce motor vehicle emissions in order to attain air quality standards and reduce air toxics risk. However, local actions are also needed.

Land use agencies, in cooperation with local air districts, can help reduce air pollution impacts in their specific communities. The Air Quality Handbook is intended to serve as an informational document for use as land use agencies adopt or revise general, regional, and community plans and zoning ordinances, conduct environmental reviews, site projects, and issue permits. It has the following objectives:

- Encourage stronger collaboration between land use agencies and local air districts to promote land use policies that minimize community exposure to and impacts from source-specific and cumulative air pollution;
- Improve and facilitate public access to air quality data collection and evaluation tools that can be used in the land use decision-making process;
- Identify approaches that land use agencies and local air districts can use to prevent or reduce potential air pollution impacts associated with land use development, siting, and permitting; and
- Identify community outreach approaches that promote a meaningful role for the public in the air quality/land use decision-making process.

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For whom is the Air Quality Handbook intended and how is it organized?

Handbook Audience

While the primary users of the Handbook will likely be agency representatives responsible for air quality and land use planning, the ideas and technical issues presented in the Handbook may 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.

Organization of the Air Quality Handbook

The Air Quality Handbook is organized into 14 Sections that follow a logical progression of questions:

1. Why is an Air Quality Handbook on Land Use necessary?

This section will be developed for the next draft.

2. What is the relationship between land use and air quality?

This Section provides general background on why regional and community-level air quality is inextricably linked to land use and why significant improvements in air quality at the regional level have not always been sufficient to resolve some localized problems.

3. What are the respective roles and responsibilities of government agencies in avoiding or reducing air pollution impacts from land use policies, plans, siting, and permitting decisions?

This Section describes the respective roles and responsibilities of local land use and air pollution control agencies in permitting and land use decisions. The Section also discusses the roles and responsibilities of other State and local agencies in the land use development and siting process.

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4. What are the respective roles and responsibilities of local school districts, land use agencies, and local air districts regarding school siting?

This Section describes the respective roles and responsibilities of school districts, local land use agencies, and local air districts in siting new schools. This Section identifies the separate and autonomous role that school districts have in the facility siting process.

5. What is the current process for addressing the air pollution impacts of land use projects?

This Section describes the existing regulatory process for evaluating and reducing or avoiding air pollution impacts from air pollution sources.

6. What land use policies should be used to prevent or reduce air pollution impacts as a result of new projects or developments, or past land use practices?

This section will be included in the next draft.

7. For what types of air pollution sources is it advisable to perform an additional analysis, and what actions should be considered if there are impacts?

This Section describes what actions a land use agency or local air district should consider if they determine that the existing regulatory process falls short of preventing or reducing a potential localized air pollution impact from industrial or major transportation sources to a nearby community or sensitive receptor.

8. What is meant by the concept of cumulative air pollution impacts?

This Section discusses the concept of cumulative air pollution impacts.

9. How does addressing cumulative impacts differ from traditional approaches to address air pollution concerns?

This Section discusses how addressing cumulative air pollution impacts on a community scale may differ from the traditional approach for evaluating air quality impacts.

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10. What factors should land use agencies consider to identify communities with cumulative air pollution impacts?

This Section discusses criteria that land use agencies might want to consider to help identify, prioritize, and address air pollution problems in those communities that are potentially exposed to cumulative air pollution impacts.

11. What type of information is needed to conduct a cumulative air pollution impacts analysis?

This Section identifies the types of information that will be needed to conduct a cumulative air pollution impact analysis and where some of the information can be found.

12. What information and tools can ARB and local air districts provide to help assess the potential cumulative impacts?

This Section identifies and describes technical information and tools that ARB and local air districts have available or are developing to assess potential cumulative air pollution impacts.

13. What actions should be considered if the analysis finds that there are cumulative air pollution impacts?

This Section describes different approaches that can be used to prevent or reduce emissions, exposure, and health risk in communities that may be affected by cumulative air pollution impacts and a new project is proposed.

14. How can information about cumulative impacts be provided to the public?

This Section suggests ways that local land use agencies and local air districts can work together to inform and involve the public and project proponents in the land use decision-making process. This Section includes information on conducting public outreach with affected communities, establishing environmental justice staff training, disseminating public information materials, working with community-based organizations, and overcoming language limitations.

Technical Supplements

The Air Quality Handbook also incorporates Technical Supplements. The Supplements include information that land use agencies and local air districts can use to review projects and other land use related activities that have the potential to cause air pollution problems. Some Technical Supplements contain information on technical tools that can be used to access information about air pollution sources and identify areas

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that may have cumulative air pollution impacts. The Technical Supplements will be added to the Air Quality Handbook as information becomes available.

Additional Features

The Air Quality Handbook also contains several features that are intended to make the document more useful to a wider audience. These elements include:

- a contact list of pertinent federal, State, and local agencies;
- links to answers for Frequently Asked Questions (FAQs) that automatically connects the reader to information on topics of interest;
- glossary of frequently used acronyms and abbreviations;
- sidebars that provide examples, explanations of key terms, or brief overviews of items being discussed; and
- information on how to access a statewide clearinghouse of actions taken by local governments and local air districts that have been effective in reducing cumulative air pollution impacts.

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1. Why is an Air Quality Handbook on Land Use necessary?

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2. What is the relationship between land use and air quality?

In the most general sense, land use is the placement of activities and physical structures within a defined geographical area. Land use can provide residents and the work force with a more livable community.

Effective land use policies and decisions can enhance the long-term fiscal and economic climate of a community, stimulate the construction of affordable housing and preserve residential neighborhoods, revitalize economically depressed areas, equitably distribute public resources, conserve natural resources, enhance recreation and open space opportunities, provide for an adequate infrastructure and public services, and reduce traffic congestion.

But some land use policies and decisions can also generate or worsen air pollution that may impact public health. This situation may arise when individual or multiple emission sources (industrial, commercial, and transportation) are located near residential areas or other air pollution-sensitive facilities such as schools, or when sensitive facilities are located next to pollution sources. When this happens, both affected populations and local businesses can suffer negative consequences in the form of illnesses and risk of future illness, missed work and school, lower quality of life, and higher costs for public health and pollution control.

Traditionally, in order to minimize the health and safety risk to communities, different land uses were zoned (or located) according to separate classifications. These single use developments sometimes resulted in disconnected islands of activity that also led to environmental impacts. For instance, urban sprawl is characterized by single-use development patterns – single-family homes, followed by denser multi-family housing, followed by office and commercial uses, followed by industrial uses. Sprawl development, combined with a lack of development of mass transit, favors induced auto traffic as the only viable transportation option. This generated high environmental, economic, and social costs of its own. The heavy reliance on motor vehicles has resulted in motor vehicles becoming the largest source of air pollution in California.

Even “smart growth” developments, where mixed-use development balances housing, commercial uses, and recreational/cultural activities, may lead to air pollution impacts.

Land Use Zoning Classifications:

- Open Space (agriculture, forest, park, conservation)
- Residential (low, medium, high density), single and/or multiple family)
- Commercial (miscellaneous retail, dry cleaners, gas stations, auto body shops, distribution centers, etc.)
- Heavy industrial (power plants, refineries, chemical manufacturing, cement kilns, etc.)
- Light industrial (chrome plating shops, computer electronics, etc.)
- Public, Academic, Institutional (schools, hospitals, landfills, stockyards, military bases)
- Mixed Use (commercial and industry mixed with residential and/or academic)

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Some mixed land uses may pose pollution problems from the proximity of emission sources to the public, such as:

- Zoning which allows industrial land uses to be next to residential land uses;
- a residential housing tract that is downwind of a large industrial facility;
- a child care center with a playground that is adjacent to a gas station;
- a small business such as a dry cleaning operation, auto body shop, or chrome plater that is located next to or near a home or school; and
- a housing development or school yard directly behind a light industrial or commercial area that has small businesses such as welding, auto repair, or painting.
- An elementary school or residential development immediately next to a freeway.

This can occur when commercial or industrial activities or indirect sources of pollution¹ are located within or concentrated close to residential areas or sensitive receptor locations. The same problems occur when sensitive receptors, such as residences, hospitals, schools and churches, are located adjacent to sources of pollution.

Some established or older communities may have land use development patterns that provide no buffer between heavy industries and homes and schools. However, large industrial areas are not the only land uses that cause public health concerns. Land use concerns are also related to mixed-use communities where emissions from an accumulation of many small sources may expose nearby residents to elevated health risk, and small sources of air toxics that are located very close to sensitive receptors, such as homes or schools.

Some categories of land uses don't directly emit air pollutants but result in increased traffic that does. These "indirect sources" include warehouses, truck stops, bus terminals, shopping centers, business parks, etc. The potential for elevated emissions, exposure, and health risk is

increased if the indirect source is serviced by diesel trucks which increases toxic particulate matter from diesel-fueled engines (diesel PM) in the area due to increased truck traffic, truck idling on site, and emissions from truck-mounted, diesel-powered refrigeration units. Communities living near these types of facilities may be exposed to high levels of air toxics because of the high concentrations of associated diesel emissions from trucks and portable generators.² In addition, communities in proximity to heavily trafficked roadways can also be affected by cumulative impacts.

¹ARB defined the term "indirect sources" in a July 1990 Technical Support Document for the Development of Indirect Source Control Programs as part of the California Clean Air Act Guidance. As defined in the 1990 document, an indirect source "is any facility, building, structure or installation, or combination thereof, which generates or attracts mobile source activity that results in emissions of any pollutant for which there is a state ambient air quality standard." Examples of indirect sources include employment sites, shopping centers, schools, sports facilities, housing developments, airports, commercial or industrial development, and parking lots and garages. Although ARB's definition of an indirect source is limited to sources that emit criteria pollutants, the definition could apply equally well to indirect sources that contribute to cumulative emissions, exposure, and risk.

² Gasoline-powered vehicles produce emissions of benzene, 1,3-butadiene, formaldehyde, acetaldehyde, and many other toxics. Diesel-fueled vehicles produce diesel particulate matter (diesel PM), a known

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In order to focus on land use projects and activities that can have the greatest effect on emissions, exposure, and health risk, the Air Quality Handbook will focus on information and assessment tools that can be used when making land use decisions that can affect the following:

- a. Proximity of sources and populations.** Localized air pollution impacts can occur when a facility, or heavily trafficked roadway, or light industrial source, or commercial business operation is located near a population center or sensitive receptor such as a school or hospital. In this case, the problem may be caused by an inappropriate land use designation or by inadequate performance standards that are applied to projects as a condition of approval.
- b. Concentration of sources.** In mixed-use areas, even controlled emission sources or activities can lead or contribute to a cumulative air pollution impact if, in the aggregate, they are harmful to public health.
- c. Land use development.** The process that affects how land is developed or what projects are developed in an area may have direct and indirect effects on air quality. Direct effects could come from many aggregated small sources. These can be light-industrial or commercial sources such as autobody shops, gas stations, dry cleaners, or chrome platers. Indirect effects could come from transportation-related impacts, such as truck idling and traffic congestion near residential areas or sensitive receptors.

Sections 3 and 4 will discuss the respective roles and responsibilities of government agencies and local air districts, and local school districts, in the decision-making process.

carcinogen. Diesel PM, essentially soot created by the incomplete combustion of diesel fuel, contains more than 40 individual toxic substances, including benzene, 1,3-butadiene, and polycyclic aromatic hydrocarbons (PAH). Researchers using exposure models have found that particulate matter from diesel-fueled engines (diesel PM) contributes over 70% of the known risk from air toxics today (ARB Diesel Risk Reduction Plan, October 2000). It is produced by on-road vehicles (like heavy-duty trucks and buses), large off-road vehicles (like bulldozers, tractors, ships, and train locomotives), and large equipment (like drilling and pump engines). These pollutants can heighten near-source health risk from high-volume roads, exceeding risk from all but the most significant industrial emissions sources.

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3. What are the respective roles and responsibilities of government agencies in avoiding or reducing air pollution impacts from land use policies, plans, siting, and permitting decisions?

A wide variety of federal, State, and local government agencies are responsible for regulatory, planning, and siting decisions that impact air pollution. They include 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 the next Section.

Land Use Agencies

The next draft will summarize additional general information on land use.

Under State law, city and county land use agencies have the primary authority to plan and control land use. Each of California's incorporated cities and counties are required to adopt a comprehensive, long-term General Plan. The General Plan is a set of long-term goals and policies that the community uses as a blueprint for how a community will grow and to guide future development decisions. A General Plan lays out the parameters for existing and future growth. It also sets forth policies and general principles for specific land uses in order to avoid harmful emissions, exposure, and health risk to the public and sensitive populations, such as children, the elderly, or the infirm.

Zoning puts the General Plan's long-term goals into action. They are local laws adopted by counties and cities that describe lot-by-lot the kinds of development that will be allowed within their boundaries. Under a zoning ordinance, development must comply with performance standards such as minimum lot size, maximum building height, minimum building setback, and a list of allowable uses. These decisions are made by local elected officials at public hearings, based on recommendations made by their planning staffs, with input from the public, developers, and other interested parties.

Zoning codes can be especially valuable in preventing or mitigating potential air pollution impacts. Among other things, zoning can be used to separate incompatible land uses.

Land use agencies can also require businesses and vehicle fleets to meet conditions that will prevent or reduce emissions as part of the permit to operate. These requirements can include restrictions on operating hours, building standards and codes, property setbacks between the business property and the street or other structures, vehicle idling restrictions, or traffic diversion.

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Land use plans and projects may also trigger an environmental assessment under the California Environmental Quality Act (CEQA) for potential air quality impacts if, among other things, it will expose sensitive receptors such as schools, day care centers, hospitals, retirement homes, convalescence facilities, and residences to substantial pollutant concentrations.”³ A general discussion of CEQA can be found in Section 5. Readers interested in learning more about CEQA should refer to the Governor’s Office of Planning and Research. A comprehensive listing of land use planning documents are available on their website at <http://www.opr.ca.gov>.

Local Air Districts

Under State law, local air districts are the local government agencies responsible for improving air quality. There are 35 local air districts in California.⁴ These local air districts are generally the first point of contact for resolving local air pollution issues or complaints. Local air districts have authority and primary responsibility to regulate stationary sources of air pollutants, such as industrial and commercial facilities, power plants, construction activities, outdoor burning, and other non-mobile sources of air pollution. Local districts also have some authority to regulate mobile sources operating within their jurisdiction (see Table 3-1).

The primary approach for controlling stationary sources of pollution at the local level is through local air district permits and rules that limit emissions. Permits to construct and permits to operate contain very specific requirements and conditions that require each source to limit its air pollution in compliance with local air districts rules as required by federal and State law.

Local air districts are also responsible for enforcing air pollution rules and regulations for stationary sources at the local level. Local air districts inspect facilities periodically to ensure that they are in compliance with their permit conditions. If a business is found to out of compliance with its permit conditions, the local air district takes enforcement action against the business. This will usually take the form of issuing a citation, but in extreme cases a local district can take action to revoke the permit of the facility to stop the offending air pollution-producing activity.

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.

³ CEQA Guidelines, Appendix G, Environmental Checklist Form. See also http://ceres.ca.gov/topic/env_law/ceqa/guidelines/Appendix_G.html.

⁴ Contact information for local air districts in California is listed in the front of this Handbook.

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California Air Resources Board

The California Air Resources Board (ARB) is the State air pollution control agency. The ARB plays an advisory role in the land use decision-making process by assisting land use agencies and local air districts on air quality issues. In this role, the ARB provides information, technical support, and evaluation tools needed to assess air pollution impacts at the regional and local levels. This role is further described in Section 12.

**Table 3-1
Local Sources of Air Pollution, Responsible Agencies,
and Associated Regulatory Programs**

| Source | Example | Primary Agency | Applicable Regulation |
|--------------------|---|--------------------------|--|
| Large Stationary | Refineries, power plants, chemical facilities, certain manufacturing plants | Local air districts | Operating permit rules Toxic 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, ARB | Operating permit conditions, Toxic Hot Spot Laws (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 |

The ARB's primary role in meeting federal and State clean air requirements is to reduce motor vehicles emissions. Because motor vehicles are the largest source of air pollution in California, regulating this category has and will result in significant reductions in cumulative emissions, exposure, and health risk.

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ARB also regulates emissions from consumer products such as hair sprays, perfumes, cleaners, and aerosol paints.

The ARB also identifies some pollutants as toxic air contaminants and adopts air toxic control measures (ATCMs) to reduce the emissions, exposure, and health risk associated with these toxic pollutants. Once ARB adopts an ATCM, local air districts must implement the ATCM or adopt and implement air toxic pollutant control measures that are at least as stringent as those adopted by the ARB.

Other Agencies

Governor's Office of Planning and Research (OPR)

OPR has a vital role to play in the land use-air quality relationship. In addition to serving as the Governor's advisor on land use planning, research, and liaison with local government, it also develops the State's policy on environmental justice and serves as the State coordinator for several environmental and State planning programs. OPR recommends and implements the State's policies on land use planning, providing technical planning advice to local governments. It also advises project proponents and government agencies on CEQA provisions and operates the State Clearinghouse for environmental and federal grant documents.

Transportation Agencies

Transportation agencies play a role in the land use decision-making process. Local transportation agencies work with land use agencies in developing 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 (MPO), Regional Transportation Planning Agency (RTPA), and the California Department of Transportation (Caltrans) to develop long and short range transportation plans and projects.

The California Department of Transportation (Caltrans) is the agency responsible for setting State transportation goals and for planning, design, construction, operations and maintenance activities, including rail passenger service between several cities in California. 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 a safety hazard 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 undertake considerable planning. The outcome of such planning may ultimately be a project as minor as a traffic signal or as major as a freeway. Such projects must meet

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applicable State, regional, and local goals and objectives and, for capacity-increasing projects, air quality goals.

When requested, Caltrans assists the regional agencies in developing regional plans.

As a CEQA agency, Caltrans also evaluates the location of transportation-related projects for regional air quality impacts, both from the perspective of emissions associated with vehicle miles traveled as well as road congestion.

California Energy Commission

The California Energy Commission (CEC) is the State's CEQA lead agency responsible 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 facility closure of such plants. The CEC uses an open and public project 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, CEC staff 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 in their technical assessments.

The CEC has developed and distributed two *Energy Aware Planning Guides*. The first Guide, published in 1993, provides ideas and information on energy management opportunities with potential economic benefits for local and regional governments. The Guide addresses energy issues, general plan updates, traffic congestion management plans, and other State mandates. The second Guide, published in 1996, is geared to local governments and the broad range of groups and stakeholders and focuses on energy facility permitting. The Guides are available on the CEC's webpage:

<http://www.energy.ca.gov>.

Councils of Government

Councils of government (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 (MPO) for the region.

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4. What are the respective roles and responsibilities of local school districts, land use agencies, and local air districts regarding school siting?

The primary authority for siting public schools rests with the local school district as specified in the [California Education Code](#) and the [California Public Resources Code](#) (under CEQA requirements). The California Education Code requires public school districts to notify the local planning agency about siting a proposed new public school or expanding an existing school. However, school districts retain the authority to overrule local zoning and General Plan land use designations for schools if specified procedures are followed.⁵ The planning agency must report back to the school district regarding a project's conformity with the adopted General Plan. In addition, before making a final decision on a school site acquisition, a school district must evaluate proposed projects for air emissions and health risk, irrespective of the impacting source(s) by preparing and certifying an environmental impact report or negative declaration.

Both the California Education Code⁶ and the California Public Resources Code⁷ require school districts in preparing the environmental impact report or negative declaration pursuant to CEQA to consult with local air districts. Such consultation is required to identify both permitted and un-permitted facilities within the local air district's authority. Such facilities include, but are not limited to, freeways and other busy traffic corridors, large agricultural operations, and rail yards, within one-fourth of a mile of the proposed school site, that might emit hazardous air emissions, or to handle hazardous or acutely hazardous materials, substances, or waste.

The school district is then required to make one of the following written findings:

1. Consultation with the local air district revealed no applicable facilities or significant pollution sources.
2. Applicable facilities or other pollution sources did exist but
 - associated health risks would not pose an actual or potential endangerment of public health to the students or school workers;
 - corrective measures required by other agencies on the applicable facilities or sources would mitigate all chronic or accidental hazardous air emissions to levels that would pose no actual or potential endangerment to students or school workers;

⁵ Government Education Code section 53091 requires a school district to comply with city or county zoning ordinances when such ordinance makes provisions for the location of public schools, and the city or county has adopted a General Plan. However, section 53094 of the Education Code allows the school district to render a city or county zoning ordinance inapplicable to proposed classroom facilities by vote of two-thirds of its School Board members.

⁶ California Education Code section 17213.

⁷ California Public Resources Code section 21151.8.

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- for a school site with a 500 foot boundary to the edge of a freeway or other busy traffic corridor, the school district determines, through air dispersion modeling and consideration of mitigation measures that any short or long term exposure would pose no significant health risk to students.
3. The school district cannot meet the conditions in 1 and 2 above and is unable to locate a suitable alternative site. In this case, the school district shall adopt a statement of overriding considerations that finds the project should be approved despite its environmental damage based on the ultimate balancing of the merits.⁸

Some school districts, such as the Los Angeles Unified School District (LAUSD), use a [standardized assessment process](#)⁹ 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 records searches to identify and calculate emissions from non-permitted sources within a 1/4 mile radius of a proposed site. Traffic count data and vehicular emissions data can also be obtained for major roadways and freeways in proximity to the proposed site to model the potential emissions impact to students and school employees. This information is available from the local council of governments or Caltrans.

As indicated earlier, school districts can overrule local zoning and General Plan land use designations for schools if they follow certain procedures. However, early consultation and collaboration with land use agencies and local air districts regarding school location and performance standards may help to avoid the potential for cumulative emissions, exposures, and health risks from air pollution to students and school workers.

Such a collaborative effort could involve holding joint public meetings and disseminating information materials that discuss the most common school siting air quality issues and actions that can be taken to avoid harmful pollution exposure and health risk. Information on possible mitigation and public outreach approaches is available in Sections 13 and 14 of this Handbook.

⁸ For more information on Statements of Overriding Considerations, the reader should refer to the Resources Agency web site (http://ceres.ca.gov/ceqa/flowchart/ra_soc.html).

⁹ The LAUSD has a web site (http://www.laschools.org/oehs/s_siteassessment) that provides information pertaining to its school siting and environmental review procedures.

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5. What is the current process for addressing the air pollution impacts of land use projects?

This section describes current processes already available and commonly used in the land use decision-making process.

There are several separate but related processes for addressing air pollution impacts of land use projects. One takes place as part of the planning function and includes adoption and oversight of General Plans by land use agencies, and the adoption and implementation of regional clean air plans by local air districts.

In addition to the planning function, both land use agencies and local air districts have project or source-specific responsibilities to address the air pollution impacts of projects or sources. This includes the issuance of permits for the construction or operation of projects or sources within their operational authority, and environmental review and mitigation when projects trigger CEQA.

A. Planning Considerations

General Plan¹⁰

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.

Land use agencies can use General Plans to address air pollution impacts in a number of ways. One way is to include air quality considerations into any one or several mandatory General Plan elements required by State law (Elements). Elements serve to categorize General Plan policies and actions by subject matter. Some Elements are mandatory and others discretionary.

Mandatory Elements of a General Plan include land use, transportation circulation, housing, conservation, open space, noise, and safety. Within the General Plan, air quality and environmental considerations, policies or actions can be included that are aimed at preventing or reducing the public from air pollution emissions, exposure, and risk from different types of land uses.

OPR’s General Plan Guidelines discuss how different Elements can be used to address potential environmental impacts. For instance, a Safety Element could be used to incorporate policies or objectives that are intended to protect the public from

¹⁰ 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

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environmental hazards, including air toxics. Likewise, Circulation Element policies or standards could be used to prevent or reduce local exposure from diesel exhaust from trucks and other vehicles by diverting heavy-duty diesel trucks and buses from residential areas. By considering the relationship between air quality and transportation, the Circulation Element could also be used to prevent or reduce trips and travel, and thus vehicle emissions. Land Use Element policies could identify areas appropriate for future industrial, commercial, and residential uses. They can also address design and risk-based distance parameters between commercial land uses that are built in general proximity to residential areas or schools.

Land use agencies could also consider a stand-alone Air Quality Element that serves as a policy level document that establishes regional as well as community health goals.¹¹ 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, references emissions and pollution source data bases and assessment and modeling tools. As new neighborhood assessment tools and control approaches become available through the Handbook Technical Supplements, land use agencies should consider including these into the Air Quality Element.

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 smog, particulate matter, and air toxics. These plans incorporate strategies that will prevent or reduce emissions from industrial and commercial pollution sources and products. ARB measures to reduce statewide emissions from mobile sources, consumer products, and air toxics are also included in these regional air plans.

B. Project-Specific Considerations

In addition to the planning function, both land use agencies and local air districts adopt regulations, issue permits, and evaluate the potential environmental impacts of projects. For instance, land use agencies adopt and enforce zoning ordinances that designate what projects and activities can be sited in particular locations. Local air districts issue permits to industrial sources that contain rules and pollution control requirements that limit how much pollution a source or activity is allowed to release. Land use agencies also issue permits for the construction or operation of projects or activities. These permits generally condition a project's operations and activities to compliance with applicable laws and zoning regulations. If a project or activity falls under CEQA, the

¹¹ Several jurisdictions in California have adopted air quality elements, including the City of Roseville, Palm Desert, and Sacramento County. For further information, please refer to the California Resources Agency web site at: http://elib.cs.berkeley.edu/cgi-bin/doc_query?where-location=&where-doc_type=generalplan&special=ceres

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land use agency or local air district 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 deny the project.

Zoning

By separating incompatible land uses, zoning ordinances can prevent or reduce air pollution impacts. This is most often done with schools, but can be expanded to include other community locations, such as residences, hospitals, convalescent homes or day care centers. Sometimes, especially in mixed-use zones, separating land uses is not always feasible. Additionally, some activities that create air pollution are not always covered by local air district programs or regulations, and therefore may need to be addressed by zoning restrictions. Examples include:

- a sensitive receptor location is sited in a mixed-use zone;
- a project subject to air regulations is sited where there is a concentration of multiple pollution sources in a mixed-use area;
- a housing development is sited downwind or adjacent to a business that uses or emits air toxics; or
- a housing development or sensitive receptor location is sited within a major transportation corridor without providing for measures that can reduce excess motor vehicle or diesel emissions.

In situations like these, land use agencies should consider the use of conditional use permits for new projects that could apply performance standards or other measures to prevent or reduce emissions attributable to the source. For instance, land use agencies could consider property separation requirements between a source of air pollution and the sensitive receptor, as well as operational restrictions (such as limitation of hours, use of an indoor air filter for the sensitive receptor location) for sources where an incompatibility already exists. Section 7 contains additional information on these techniques.

The next draft will summarize appropriate sections of OPR's General Plan Guidelines.

Permitting Stationary Sources of Air Pollution

Local air districts regulate stationary sources of air pollutants, such as industrial and commercial facilities, power plants, construction activities, outdoor burning, and other non-mobile sources of pollution. Local air districts use permits that include emission limits as the primary means of controlling new or modified stationary sources of pollution.

Permits to construct and permits to operate contain very specific requirements and conditions that tell each source what it must do to limit its air pollution in compliance

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with local air district rules, regulations, and State law. Prior to receiving a permit, new or modified facilities must go through a review process that establishes air pollution control requirements for the facility. Once issued, permits to operate are reviewed and renewed on a regular basis (between one and five years).

Local air districts notify the public about new permit applications for major new facilities, or major modifications to existing facilities, seeking to locate within 1000 feet of a school.

Local air districts can also regulate non-permitted stationary and areawide source activities to reduce emissions. These can include regulations to reduce the following emissions sources:

- hazardous materials in products used by industry such as paints, solvents, and de-greasers;
- 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 industrial and commercial emissions sources are typically subject to the permit authority of both the land use agency and local air district, sensitive receptor projects such as a day care center, convalescent home, or playground are not ordinarily subject to an air permit. Moreover, local air district do not frequently impose conditions on regulated sources based on the proximity of sensitive receptor projects to existing industrial or commercial facilities. Land use agencies are encouraged to work with their local air district counterparts to address these issues.

Environmental Review Process for Projects

Air pollution impacts are also currently addressed through CEQA, which requires State and local agencies subject to the jurisdiction of California to evaluate the environmental implications of their actions. Such actions must be consistent with State and local laws. An agency that falls under CEQA is generally required to review a project for potential environmental impacts, including air quality, if the project has the potential to result in a physical change to the environment.

CEQA only applies to “discretionary projects.” Discretionary means the public agency must exercise judgment or deliberation when deciding to approve or disapprove a particular activity. This is different from situations where the agency determines whether the project conforms with applicable laws, ordinances, or regulations.¹² Examples of discretionary projects include the issuance of a conditional use permit, rezoning a property, or widening of a public road. Projects that do not require a

¹² CEQA Guidelines Section 15375

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discretionary decision and can be approved administratively are referred to as ministerial projects. Examples of typical ministerial projects include the issuance of a building permit or a license for a business that is located in an area that is zoned for that activity. As a general rule, CEQA does not apply to ministerial projects carried out or approved by local agencies.¹³

Environmental assessments are evaluated under [CEQA](#) procedures.¹⁴ Its purpose is to consider potential adverse environmental impacts of a proposed plan or project, suggest methods to minimize those impacts, and discuss alternatives to mitigate any potential impacts. The CEQA process provides elected and appointed officials with the information they need to base their decisions. The CEQA process also provides an opportunity for other agencies, including air agencies, interested parties, and the general public to comment on the proposed plans or projects.

Under CEQA, public agencies have different responsibilities to prepare, review, and comment on environmental documents that describe the potential environmental effects of proposed plans, projects, and activities.

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, 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.

To assist in determining the environmentally significant effects of a project, agencies use criteria, termed Thresholds of Significance, to assess the potential impacts, including air quality, of a given project.

¹³ See California Public Resources Code section 21080(b)(1).

¹⁴ The Governor’s Office of Planning and Research maintains comprehensive information on the California Environmental Quality Act, including the statute, guidelines, reference documents, supplemental materials, and case law. The reader may also refer to the California Resources Agency CEQA website at http://ceres.ca.gov/topic/env_law/ceqa/

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Once a potential environmental impact is identified, the land use agency can prevent or reduce the environmental significance of a project through conditional use permits in which mitigation measures are imposed on the source as a condition to operate or construct. Performance standards can be used to enforce mitigation measures in the permit (see Section 7 for more detailed information on these mechanisms). A land use agency can also incorporate mitigation measures that are suggested by the local air district as part of the project review process.

These separate environmental assessment and control processes reduce the potential impacts that projects may have on air pollution. Even so, cumulative emissions, exposure, and health risk remain too high in many communities. As will be discussed in later sections, a greater degree of partnership and communication between land use agencies and local air districts in both the planning and project approval stages can further reduce individual and cumulative impacts. Closer collaboration 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 next sections discuss the concepts of localized and cumulative air pollution impacts and identify actions that should be considered to address them.

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- 6. What land use policies should be utilized to prevent or reduce air pollution impacts as a result of new projects or developments, or past land use practices?**

Wording will be provided in the next draft.

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7. For what types of air pollution sources is it advisable to perform an additional analysis, and what actions should be considered if there are impacts?

Sometimes, air pollution controls alone are not always sufficient to protect the public from adverse air quality impacts. As will be described in Section 8, localized impacts can also contribute to the cumulative emissions, exposure, and health risk in communities. However, this section focuses on those sources and activities that could have a distinct or unique impact on air pollution due to its proximity to receptors that CEQA or local air district rules may not have adequately addressed. Such an analysis could be undertaken irrespective of whether the source is proposed to be located in a community that is affected by cumulative emissions, exposure, and risk.

Land use projects could be further evaluated if they are likely to result in or contribute to emissions, exposure, and risk because of where they are located, or because of the nature of their activities. For instance, even though a source may be sited in the correct zone designation, it may still pose an air pollution impact if it contributes to a concentration of sources near a residential area. Additionally, other types of developments or infrastructure projects, such as distribution centers, or traffic re-distribution, could pose an air pollution impact if it is upwind or in close proximity to a populated area.

Even if a facility fully complies with all applicable air pollution regulations, a land use agency should still consider additional analysis and mitigation for certain project categories that have the potential for creating an air pollution impact. Some examples include:

- a major industrial facility that emits air toxics that would be located near a residential area or school;
- a small business or light-industrial facility that would emit air toxics, even in minute amounts, such as hexavalent chromium, upwind of a residential or sensitive receptor location;
- a commercial facility or major transportation corridor that would induce traffic especially with relation to diesel trucks adjacent to a residential area or school yard.
- sensitive receptor projects e.g., a school or convalescent home seeking to locate or located near any of the above sources.

Each of these scenarios has the potential, either individually or combined with other sources in the area, to result in elevated local levels of air pollution, including air toxics. Table 7-1 provides a listing of many of the more common air pollution sources and what pollutants they are likely to emit. In addition, Appendix A provides a more extensive matrix that compares standardized land use activity classifications to examples of facilities or projects that may fall under such classifications, along with associated air pollutants and whether they normally require local air district permits.

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Table 7-1 – Examples of Facility Types That May Emit Toxic Air Contaminants

| <u>Categories</u> | <u>Facility Type</u> | <u>Potentially Emitted Toxics</u> |
|-------------------|---|--|
| Commercial | Dry Cleaners Gas Stations Autobody Shops Furniture Repair Film Processing Services Warehouses and Supermarkets Printing shops Diesel Engines | Perchloroethylene Benzene Metals, Solvents Solvents ¹ Solvents Diesel Particulate Matter Solvents Diesel Particulate Matter |
| Industrial | Manufacturers Metal Platers, Welders, Metal Spray (flame spray) operations Chemical Producers Gasoline Refineries Furniture manufacturers Shipbuilding and Repair Rock quarries and cement manufacturers Hazardous Waste Incinerators Power Plants Research and Development Facilities Freight Distribution Centers | Solvents, Metals Hexavalent Chromium, Nickel, Metals Solvents, Metals Benzene, Solvents, Metals, PAHs, Dioxin Solvents Hexavalent chromium and other metals, Solvents Silica, Particulate Matter Dioxin, Solvents, Metals Benzene, Formaldehyde, Particulate Matter Solvents, Metals, etc. Diesel Particulate Matter |
| Public | Landfills Waste Water Treatment Plants Medical Waste Incinerators Recycling, Garbage Transfer Stations Municipal Incinerators | Benzene, Vinyl Chloride Hydrogen Sulfide Dioxin, Benzene, PAH, PCBs, 1,3-Butadiene Diesel Particulate Matter Dioxin, Benzene, PAH, PCBs, 1,3-Butadiene |
| Transportation | Port Facilities Airports Rail Yards Freeways and Roadways | Diesel Particulate Matter Benzene, Formaldehyde Diesel Particulate Matter Diesel Particulate Matter, Benzene, 1,3-Butadiene, Formaldehyde |

¹Not all solvents are toxic air contaminants; as contained in this table, “solvents” include those products that contain toxic air contaminants.

Even without sophisticated health risk assessments and modeling, land use agencies can respond to community concerns about adverse health effects or risk associated

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with the land use process. Both land use agencies and project proponents can use readily available approaches and analytical methodologies that address the potential for land use plans or projects to have an adverse impact on public health.

The following concepts provide some general approaches that land use agencies should consider to prevent or reduce land use-related air pollution impacts, or address impacts that are existing or discovered after a project is approved.

General Plans

- General Plan updates should be considered to reflect OPR's latest guidelines related to sustainable development and environmental justice.¹⁵
- Policies within the General Plan can include actions to reduce diesel PM emissions from land use activities and indirect sources where diesel-fueled vehicles are concentrated.

Performance Standards

In the context of land use planning, performance standards are requirements imposed by land use agencies on projects to ensure compliance with general plan policies, local ordinances, or permit conditions. To the extent that resources are available, land use agencies should consider working with local air districts or the ARB to develop and/or require design changes or performance standards to prevent or reduce potential air pollution impacts to the surrounding community. These standards could apply to project categories such as distribution centers, gas stations, autobody shops, dry cleaners, metal melters, and finishing shops, or print shops. Such standards would provide certainty and equal 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 any case, the land use agency should consult with the local air district when considering design features of the potential project and its impacts on air quality.

Some considerations should include:

- Requiring process changes or materials substitution which will eliminate or reduce the use of toxic compounds;
- Requiring the installation of control equipment that will eliminate or reduce air toxic emissions;
- Raising a stack height, or placing an air vent from a process line away from a nearby school yard;
- Imposing a risk-based distance requirement between the project fence line and a population center;

¹⁵ Chapter 2, OPR General Plan Guidelines

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- Reducing the idling of diesel-fueled vehicles that may be associated with the project;
- Requiring the use of clean-fueled vehicles;
- Requiring general housekeeping or preventive measures that will reduce the likelihood of fugitive emissions being vented into neighboring homes or yards;
- Increasing the number of permit inspections (either by the land use agency or the local air district); and
- Re-routing trucks away from residential neighborhoods.

Interagency Assessment and Consultation

- If a land use agency intends to approve a project, it should consider working with the local air district to develop assessment factors for use in evaluating the potential air pollution impact of neighborhood-scale projects such as those identified in Table 7-1. These factors would be based on the agencies' judgment that certain types of project categories were most likely to contribute to, or be affected by, air pollution impacts. Factors could include such land use-related elements as distance, density, project design, stack height, road design, and traffic counts. Examples of applicable project categories include:
 - a proposed housing project if it exceeded a certain number of units;
 - an elementary school if the proposed location in proximity to a distribution center;
 - a business park that would induce truck idling in the vicinity of a residential area;
 - or,
 - an existing rail or port facility proposed for expansion.¹⁶
- Federal, State and local agencies that are responsible for funding, planning, and implementing long-range projects (e.g., road projects or new manufacturing plants) should consider enhancing public consultation to ensure that plans and projects contribute to air quality improvement.

¹⁶ SCAQMD Air Quality Handbook. Screening Table for Operation, Daily Thresholds of Potential Significance for Air Quality.

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Project Checklist

- ARB will work with local land-use agencies in developing a project checklist that could screen source categories such as those in Table 7-1 or other types of land use development that would be most likely to pose a localized air pollution impact. Such a checklist could consist of a number of review questions for the project proponent. Local air districts could assist in the development of this checklist and provide relevant information on emissions permit conditions and control requirements.

Public Outreach

- Consultation at the earliest stages of project development between planning agency staff, project proponents, and the public can prevent or reduce localized impacts to a community or sensitive receptors and result in a more efficient and less costly decision-making process. More information is provided on this subject in Section 14.

Financing Mechanisms

- Federal, State, and local funds, bonds, or special grants that are focused on reducing emissions from polluting sources are sometimes available for eligible land use projects. As available, ARB will provide information on available programs that local governments should consider in assisting them to prevent or reduce emissions in impacted communities.

Conditional Use Permits

- Some types of land uses are only allowed upon approval of a conditional use permit (also called a CUP or special use permit). These uses might include community facilities (i.e., hospitals or schools), public buildings or grounds (i.e., public fleet garages), or uses with potentially significant environmental impacts (i.e., hazardous chemical storage or surface mining). The local zoning ordinance specifies the uses for which a conditional use permit is required, the zones they may be allowed in, and the public hearing procedure. When allowing a project, the conditional use permit impose special requirements to insure that the use will not be detrimental to its surroundings. Requirements might include such things as additional landscaping, soundproofing, limited hours of operation, property setbacks, or road improvements. A conditional use permit does not rezone the land.
- Conditional use permits can sometimes be useful in siting a project to prevent or reduce emissions that might otherwise pose an unacceptable impact to public health. Land use agencies should consider a range of conditional use options that could be generically applied to source categories of greatest concern. Conditional use permits might also go beyond requirements imposed on the project by a local air district. However, a local air district may only enforce a permit condition that is

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contained in the local air district permit. Section 13 provides some additional examples of actions or conditions that a land use agency could consider.

- Conditional use permits could provide for routine or periodic inspections either by the agency or the local air district. In the case of local air district enforcement, the air permit would probably also need to incorporate the condition.
- To ensure that permit conditions result in continued avoidance of unwanted impacts, the land use agency may want to consider self-implementing conditions (e.g., a property setback or buffer from the facility's operations to the nearest receptor).

Project Denial

- A land use agency has the authority to deny a project based upon information collected and evaluated through the land use decision-making process. Any denial would need to be based upon identifiable, generally applicable, articulated standards set forth in the local government's General Plan, zoning ordinances, and other applicable local ordinances.

The following sections take the concept of localized air pollution impacts resulting from proximity of sources to a receptor to the next step -- consideration of cumulative impacts. Such impacts are most likely to occur in areas that may already be affected by emissions, exposure, and risk. This can result from a concentration of sources in the community as well the proximity of those sources to the public.

Section 8 offers a definition of cumulative air pollution impacts. The remaining sections in the Handbook rely on this definition to describe tools and actions that land use agencies and local air districts can use to evaluate and address cumulative emissions, exposure, and risk from affected land uses.

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8. What is meant by the concept of cumulative air pollution impacts?

It is important to consider the appropriateness of a new project's location in light of existing air pollution impacts in the community. In general terms, this is often referred to as the issue of "cumulative impacts."

Many factors contribute to areas that experience cumulative air pollution impacts. These include historic land use patterns, the prevalence of freeways and other transportation corridors in proximity to residential areas and sensitive receptor locations, a concentration of businesses in mixed-use communities, and local meteorology. While mobile sources are the predominant contributor to regional as well as community-level emissions, exposure, and risk, emissions from industrial and commercial sources and activities can also result in or contribute to cumulative impacts in some communities.

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. This information is important because it helps us better understand links between air pollution and the health of some of our most vulnerable groups, the young and the elderly.

The ARB is working with the California Air Pollution Control Officers Association (CAPCOA) and Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) to improve air pollutant data and evaluation tools to determine when and where cumulative air pollution impacts may be a problem. Section 12 provides more detailed information on the work ARB is doing to improve the data and analysis tools needed to perform a cumulative air pollution impacts analysis.

The cumulative impacts of air pollution on an area are a function of regional and local factors that need to be understood in order to address the problem. The most important of these is the regional urban air pollution background that is due to the overall contribution of all air pollution sources in the region. ARB studies have found that this urban regional background level remains relatively constant over much of an urban area unless you are near a source of air pollution. In general, this regional air pollution background is dominated by mobile source emissions. Stationary air pollution sources may also make a significant contribution to cumulative impacts if a facility is near residential areas or schools, or if there is a concentration of polluting facilities in an area. This concentration can occur when two or more sources of air pollution, which may or may not individually exceed acceptable regulatory standards, pose a health risk.

Other environmental impacts of air pollution such as the potential for odors and visibility impairment also merit consideration in the land use decision-making process. While

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they may or may not directly impact health, these factors influence a community's perception of its quality of life.

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9. How do cumulative impact evaluation approaches differ from traditional approaches to evaluate air pollution concerns?

Until recently, California has traditionally approached air pollution control from the perspective of whether the pollution was regional, category-specific, or from new or modified industrial sources. This methodology has been generally effective in reducing statewide pollution impacts and risk levels. However, such an incremental, source-by-source approach may not always protect public health in communities that currently experience high emission levels from an aggregation of existing multiple sources, direct and indirect, mobile, stationary, and areawide. It is clear that new tools are needed to assess the impacts from multiple sources.

To evaluate the types of new tools needed to address cumulative impacts directly, the ARB and local air districts have conducted neighborhood assessment and children's health studies during the past few years. Different tools have emerged from these studies that show early promise in presenting, evaluating, and addressing cumulative air pollution impacts at the neighborhood scale where the greatest harm may be felt.

For example, ARB has produced regional risk maps that show statewide trends for Southern and Central California in estimated inhalable cancer risk from air toxics between 1990 and 2010.¹⁷ Additionally, ARB's Neighborhood Assessment Program builds on California's long-standing program to provide information to the public on air toxics in communities. Moreover, over the past 12 years, statewide air toxics data on individual industrial sources have been collected, the public has been notified of potentially high risk, and risk reduction plans developed for those sources that pose the highest risk to the public.

One aspect of ARB's programs now underway is to consolidate air toxics emissions and monitoring data by region, to use modeling tools and other analytical techniques to take a preliminary look at emissions, exposure, and health risk in communities, and to make this information easily accessible to the public (see section 12 for more detailed information).

Equally important is the effort to develop more sophisticated technical tools for performing assessments on a neighborhood scale. This effort is part of the Neighborhood Assessment Program, which is a key component of ARB's overall community health program. The neighborhood program includes air monitoring in neighborhoods¹⁸ and development of tools that can be used to assess other neighborhoods. These techniques will help detect any differences in exposure among

¹⁷The ARB has produced State Trends and Local Cancer Risk Maps, which can be found at the ARB web site at: <http://www.arb.ca.gov/toxics/cti/hlthrisk/hlthrisk.htm>

¹⁸ More detailed information can be found at ARB's Community Health Program web page at: <http://www.arb.ca.gov/ch/programs/programs.htm>

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neighborhoods and will aid in making progress on reducing health risks in all California communities.

Although these tools show promise for assessing cumulative air pollution impacts, it is still an evolving science. Modeling and evaluation tools are very data intensive, requiring current emissions data from businesses and industry, transportation, sensitive receptors, mobile sources, and land uses.

Section 12 provides further information on these efforts while Section 13 offers some possible approaches that land use agencies and local air districts might want to consider to address cumulative air pollution impacts.

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10. What factors should land use agencies consider when trying to determine whether there are cumulative air pollution impacts?

ARB staff received a comment that these factors should be further discussed at the October Stakeholders meeting.

When determining whether there are existing cumulative air pollution impacts in a community, land use agencies should first consider the “nature of the potential problem” and the “tools” at hand that can provide the key to understanding the impacts.

This section contains a list of factors that might be considered by land use agencies and local air districts when helping to determine the nature of cumulative emissions, exposure, and risk in impacted communities. The land use agency should consult with the local air district for help in selecting criteria that best fit the situation. Section 12 will discuss the tools that can be used to evaluate potential impacts that are identified.

Air Pollution Emissions and Exposure

- Emissions or pollutant concentrations
- Exposure to levels of smog-forming, regional pollutants above ambient air quality standards
- Concentration and number of pollution sources within a geographic region
- Proximity of pollution sources to people
- Ambient air monitoring data

Data Collection and Availability of Evaluation and Mitigation Tools

- How good are the data (emissions - air toxics and smog-forming pollutants) and what is the quality of the scientific tools
- Is there census data that could be used to compare air pollution sources with race, poverty, and other socio-economic factors

Risk and Health Hazards

- Excess cancer risk from exposure to air toxics
- Acute or chronic health risk (hazard index)¹⁹ due to air toxics exposure
- Availability and quality of existing databases
- Risk to maximum exposed individuals

¹⁹ **Next draft will contain a citation on acute and chronic hazards**

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Public Nuisance

- Exposure to odor nuisances or other air pollution nuisances, e.g., dust

Impact Assessment

- Magnitude of the impacts
- Maximally exposed (most sensitive) individual
- Number of exposed individuals
- Degree of potential harm and weight of evidence
- Non-quantifiable impacts (e.g., the potential for accidental releases of air pollutants)²⁰
- Relative contributions of different source categories to the problem
- Socio-economic factors associated with maximally exposed individuals

Land Use and Zoning

- Adjacent incompatible land uses
- Mixed-use zoning that places sources of pollution in close proximity to people

Location

- Geographic area impacted
- Proximity of sources to the nearest receptor

Compliance and Complaints

- Enforcement and compliance statistics, e.g., facility compliance record, frequency of inspections, number of violations, etc.
- Community or public concerns or complaints

Once areas that may have cumulative air pollution impacts are identified, land use agencies should work with local air districts to consider the extent of their data collection needs and the availability of assessment tools needed to conduct a cumulative impact analysis. Some considerations might include:

- availability of tools to assess cumulative emissions, exposure, and risk that takes into account mobile, stationary, and area sources;
- data availability that supports the assessment tools requirements;
- identification of contributing source categories, e.g., mobile, stationary, and areawide, and sub-categories of sources within the major categories;

²⁰ All local air districts have procedures in place to respond to emergency situations. These include agreements with the local Office of Emergency Services, County administration, sheriff or police departments, or other agencies that the local air district identifies.

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- identification of pollutants that contribute to the cumulative emissions, exposure, and risk in the identified area;
- level of compliance of applicable sources with land use and air quality requirements; and
- availability of land use and air pollution control measures that can be used to reduce emissions, exposure, and health risk in the community.

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11. What type of information is needed to conduct a cumulative impacts analysis?

There are two basic types of information needed to perform a cumulative air pollution impacts analysis: land use information and air pollution information. The land use information can answer questions about the proximity of air pollution sources to sensitive receptors, the potential for incompatible land uses, and the potential for a concentration of polluting facilities to develop. The air pollution information, which is 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, and health risk estimates.

Even without conducting a formal cumulative air pollution impacts assessment, land use agencies can use existing tools to identify potential areas that may be exposed to cumulative air pollution impacts.

General Plans, parcel maps, and zoning maps are an excellent starting point to understand the impact potential of different areas. 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 possible adjacent incompatible land uses.

Some types of useful information that land use agencies should have on hand 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 that are sources of air pollution. Such maps can be developed with the assistance of local air districts, and also identify land uses of different project types within zones that could contribute to or be affected by cumulative emissions, exposure, and risk (e.g., a proposed hospital located next to a distribution center).
- Historical information about the relevant community.
- Current 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

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process. However, from an air quality perspective, socioeconomic data is most particularly useful to identify environmental justice issues, including incompatible industrial facilities and land uses in low-income and minority neighborhoods that can pose a significant hazard to human health.

- Emissions, monitoring, and risk-based maps created by the ARB or local air districts that show how the health risk associated with air pollution are distributed within several communities 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 gas stations, dry cleaners, auto body shops, metal plating, and finishing shops, printing and publishing facilities, and portable classrooms.
- 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.²¹ Very large facilities, such as ports and marine terminals, and airports, could be analyzed regardless of proximity to a receptor if they are within the modeling area.
- Location and acreage of existing and proposed schools and other sensitive receptors.
- Location and density of existing and proposed residential development.
- Zoning requirements, property setbacks or buffer zone policies, traffic flow requirements, idling restrictions for trucks, trains, yard hostlers²², construction equipment, or school buses.
- Traffic counts, including diesel truck traffic counts, for links within a community needed to validate or augment existing regional motor vehicle trip and speed data.

²¹ [The ARB is currently evaluating the types of facilities that may act as complex point sources and developing methods to identify them.](#)

²² Yard hostler means a tractor less than 300 hp which 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.

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In Section 12, we discuss tools and information that ARB is developing for use in identifying and addressing communities that could be experiencing cumulative air pollution impacts. If a land use agency wishes to perform its own cumulative air pollution impact analysis, the local air district may be able to provide information on the availability of sophisticated modeling and mapping tools that the land use agency could use to pinpoint the nature of the potential problem. In addition, land use agencies could consult with local air districts to determine if there is sufficient land use and air pollution data available that could be entered into an electronic Geographical Information System (GIS) format. GIS is an easier mapping tool than the more sophisticated models described in section 12. GIS mapping makes it possible to super-impose land use information with air pollution information so that the spatial relationship between air pollution sources, sensitive receptors, and air quality can be represented in a visual way.

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12. What information and tools can ARB and local air districts provide to help assess the potential cumulative impacts?

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 that will aid local agencies in assessing cumulative emissions, exposure, and health risk.

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

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 "hotspots" program. Local air districts collect emissions data from industrial and commercial facilities. Facilities that exceed health-based thresholds are required to update their emissions data every four years. Other facilities are required to update 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.

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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 twenty permanent sites. These sites are supplemented by special monitoring studies conducted by ARB and local air districts. These sites measure upwards of sixty toxic air pollutants. Diesel PM, which is the major driver of urban air toxic risk, is not monitored directly. Ten of the sixty toxic pollutants, not including diesel, account for most of the remaining air pollution 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.

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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 outcome, it does provide a useful starting point.

What is needed for community modeling?

Regional air quality models are used to evaluate air quality for large areas. There are also models that can be used 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, a modeling approach is needed that combines the strengths of neighborhood-scale and regional models.

In addition, models need further development to address cumulative exposure at the community level. Improved methods are needed to assess near-source impacts under light and variable wind conditions, because these are among the conditions when high

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local concentrations are 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 is underway?

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 air quality problems facing low-income, minority communities. Through two such studies conducted in Barrio Logan and Wilmington, ARB is refining community-level modeling methodologies. Regional air toxics toxic modeling is also being performed to better understand regional air pollution background levels.

In a parallel effort, ARB is also developing modeling protocols for assessing cumulative impacts. The protocols will cover modeling approaches, procedures for running the models, the development of statewide risk maps, and methods for estimating health risks. The protocols have been 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 long-term toxic air contaminant program identifies and reduces public exposure to air toxics. The focus of the program to date has been on reducing cancer risk, because monitoring results show 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 taking another look to see if there may be localized exposures of concern from the standpoint of non-cancer health effects. 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 specifically is being done by ARB to address cumulative air pollution impacts?

As part of its Neighborhood Assessment Program, the ARB has begun a new effort to assess and reduce the localized impacts of pollution from multiple sources. The cumulative, multi-pollutant focus of this important program has led to a more comprehensive, integrated approach to ARB's overall control strategy for achieving community health goals.

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The ARB is taking two tracks for assessing cumulative impacts. The first track is to take a community-level approach that is designed to answer basic questions about community health, such as, “What is the air pollution risk in my community?” and “What are the important sources of air pollution near where I live?” While these questions are clearly of interest to community members, this information can also be useful to local land use agencies when making permitting and siting decisions.

The second track for assessing cumulative impacts is to develop technical tools that will allow for a more rigorous cumulative impact analysis at a specific location or to assess the impact of a new facility.

The Section provides a general description of micro-scale, or community level modeling tools that are available to evaluate potential cumulative air pollution impacts. Modeling protocols will be provided as Technical Supplements to this Handbook. Additionally, to the extent available, the models can be accessed on-line by going to the ARB website.

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As available, the ARB will provide land use agencies and local air districts with available statewide regional modeling results and technical assistance for micro-scale modeling.

A local land use agency or local air district should work together to use these methodologies in the following ways:

- To conduct an environmental review of a large, new or expanded land use project;
- To examine the impacts of a project variance from a zoning requirement; and
- To assess cumulative air pollution impacts in a community as part of a general plan update or air quality element review.
- To consider the adequacy of pollution control requirements for sources in the affected community;
- To consider whether to issue a permit to operate to a new source of pollution in an already impacted area;
- To consider whether permit conditions for a new source of pollution are adequate to protect public health, or whether additional pollution prevention and/or pollution control measures are necessary; and
- To respond to a request for a more extensive assessment and reduction of cumulative emissions, exposure, and health risk.

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

²³ **We will include a website address for the next draft.**

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Statewide Risk Maps

ARB has produced regional risk maps that show the statewide trends for Southern and Central California in estimated inhalable cancer risk from air toxics between 1990 and 2010.²⁴

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 2 kilometers by 2 kilometers. Therefore, individual neighborhoods, or single facilities do not show up on these maps.

Although data are available for regional scale modeling, more care is needed to adapt such tools to a neighborhood scale. Thus far, ARB has conducted neighborhood scale assessments in Wilmington and Barrio Logan. Based on these prototypes, we are collecting data and developing a modeling protocol that can be used to conduct cumulative impact assessments throughout the State. These protocols would provide an approach for modeling established cumulative concentrations of air toxics and therefor exposure. These estimated concentrations could then be used to calculate health risk. When completed, these maps and the user protocols will be published as a separate document.

Community Health Air Pollution Information System (CHAPIS)

CHAPIS is an interactive, internet-based procedure for identifying and evaluating cumulative emissions in geographic areas defined by the user of the program. CHAPIS uses Geographical Information System (GIS) software to deliver "live" maps over the Internet.

Through CHAPIS, land use planners and air district staff can quickly and easily identify pollutant sources and emissions within a specified area. Emissions sources and quantities that CHAPIS can identify include major point (or industrial) sources, and smaller sources, such as gas stations, dry cleaners, distribution centers and the like that can be located with emissions estimated from local air district records. These data can then be submitted electronically by user request to the ARB's Hot Spots Analysis and Reporting Program (HARP) that will process toxic emissions, and provide a map of cumulative air pollution impacts in the community to the requesting user.

CHAPIS is being developed in stages to assure data quality. The initial release of CHAPIS is due out in 2003 and will include facilities emitting 10 or more tons per year of nitrogen oxides, sulfur dioxide, carbon monoxide, particulate matter of 10 microns or less, or reactive organic gases; air toxics from refineries and power plants of

²⁴ARB maintains State trends and local cancer risk maps that show statewide trends in estimated 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>)

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50 megawatts or more; and facilities that conducted health risk assessments under the California “Hot Spots” program²⁵ for specific source categories.

CHAPIS can be used by land use agencies and community groups to educate the public about community level impacts of air pollution by showing the contribution from mobile, area, and point sources on the air quality of that community.

“Hot Spots” Analysis and Reporting Program (HARP)

HARP²⁶ is a free software package that evaluates emissions to determine a neighborhood’s potential health risk based on the latest risk assessment guidelines published by Cal/EPA’s Office of Environmental Health Hazard Assessment (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 receptors near those facilities. 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 is 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 are being conducted to better understand air quality problems facing low-income, minority communities. In these studies ARB will be looking at emissions, exposure, and health risk. As they become available, the ARB, local air districts, environmental groups, community activists, affected industries and others will be able to use the tools to support consistent, uniform, and science-based evaluations of neighborhood air pollution impacts and reduction strategies. This was the case in Barrio Logan and Wilmington where ARB is conducting comprehensive neighborhood assessments to evaluate the

²⁵ “Hot Spots” program will be defined in the glossary

²⁶ More detailed information can be found on ARB’s website at <http://www.arb.ca.gov/toxics/harp/harp.htm>

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potential air pollution impacts from the proximity of high-risk facilities within the community to schools and other sensitive receptor locations.

The next draft will clarify which of these tools can be used for emissions and exposure data rather than just for risk and hazard data.

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13. What may be done if the analysis finds that there are cumulative air pollution impacts?

This document describes how land-use agencies can work with local air districts and the ARB to prevent or reduce the localized and cumulative impacts from specific sources of air pollution. However, additional source-specific strategies may be appropriate when a community is already exposed to a cumulative air pollution impact. When a land use agency or local air district determines that a community is exposed to significant air pollution impacts and health risk from existing multiple sources, ARB recommends that it consider some alternative approaches to prevent or reduce the overall impacts.

As indicated earlier, localized air pollution impacts are largely associated with the proximity of polluting sources to population centers and sensitive receptors. At the same time, localized impacts are a subset of cumulative air pollution impacts because they contribute to areas that are already impacted by emissions, exposure, and health risk resulting from the concentration of polluting sources in the community. For this reason, many of the measures and concepts identified in Section 7 for specific sources are equally applicable to areas subject to cumulative impacts.

The following sections identify both procedural and specific approaches that can be considered to reduce cumulative impacts. (Table 13-1 condenses these approaches in a tabular format.) However, land use agencies may want to refine and discuss these approaches with community residents before any strategies can be decided upon or eliminated from consideration.

With that in mind, the ARB recommends the following concepts for consideration.

A. Procedural Considerations

Above all, good information is critical to making informed decisions about land uses that can impact air quality in the community. For instance, the analysis of the impacts that general plans and projects may have on emissions, exposure, and health risk has benefited from the advancement of emissions data collections, community-based air quality modeling, and geographic mapping tools. As discussed in Section 12, these techniques allow land use agencies and local air districts to get a clearer picture of how general plan policies and siting decisions may affect public health.

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**TABLE 13-1
LOCAL LAND USE PLANNING CONSIDERATIONS TO ADDRESS
CUMULATIVE IMPACTS FROM AIR POLLUTION***

Information Collection

- Base map of the city or county planning area
- General plan designations of land use
- Current demographic data
- Location of public facilities
- Location of existing and proposed industrial and commercial facilities that produce air pollution
- Location of air pollution-sensitive facilities such as schools, day care centers and hospitals
- Location and density of existing and proposed residential areas

Incompatible Land Uses

- Residential and school uses in proximity to industrial facilities
- Residential and school uses in proximity to agricultural uses
- Residential and school uses adjacent to major thoroughfares such as highways
- Residential or commercial uses in proximity to resource utilization activities such as mining or oil and gas wells
- Facilities that emit toxic air pollutants in close proximity to residential areas or schools

Strategies to Reduce Cumulative Air Pollution Impacts

- Buffer zones between new industrial and residential and school land uses
- Policies addressing individual project citing decisions
- Capping the number of certain facilities and uses
- Changing land use designations in concentrated areas

Permit Considerations

- Coordinate with local air district on proposals with air pollution impacts
- Include standards for approving, conditionally approving, or denying proposed locations for industrial facilities in the General Plan
- Develop standards for triggering CEQA assessment
- Enforcement plan for CEQA mitigation requirements

* This Table is based on OPR's 2003 General Plan Guidelines Update. The Guidelines are intended for land use agencies that are considering updates to their General Plans or planning new projects consistent with the Plans. For more information, please refer to Chapter 2 of the Guidelines at: http://www.opr.ca.gov/planning/PDFs/General_Plan_Guidelines_2003.pdf

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■ **Community-Based Planning Committees**

Neighborhood-based or community planning advisory councils could be established to invite and facilitate direct citizen participation into the planning process. Such councils could provide a forum for the review of proposed amendments to plans, zoning matters and land use permits. With training on the land use process and technical assistance on air quality analytical tools, such councils could work with the local land use agency to determine how best to prevent or reduce cumulative air pollution impacts in their community.

■ **Community Outreach**

In conjunction with local air districts, land use agencies should consider designing an outreach program for community groups and local government agency staffs that addresses the problem of cumulative air pollution impacts, and the public and government role in reducing these impacts. Such a program would consider analytical tools that can assist in the preparation and presentation of information in a way that supports sensible decision-making and public involvement.

Land use agencies should inform the communities about the role the public can play in influencing zoning and permitting decisions. This can include information hearings, workshops, focused groups, brochures, etc.

B. Reducing Cumulative Air Pollution Impacts

After considering the procedural approaches discussed above, both land use agencies and local air districts may want to go further and consider more specific concepts that can help reduce cumulative air pollution impacts. These concepts are divided into two sections. The first section identifies specific approaches that land use agencies should consider to prevent or reduce cumulative air pollution impacts. The second section includes possible cumulative impact approaches that local air districts should consider and identifies approaches that the ARB has committed to use. Several of the local air district concepts discussed in this section incorporate ideas from the South Coast Air Quality Management District that have been developed as part of a broad regional effort to address cumulative air pollution impacts in Southern California.

Land use agencies and local air districts should refer to this section and Section 7 for examples of actions that can be taken if potential air pollution impacts associated with the project or activity can potentially occur. Additionally, Technical Supplements to the Handbook will also provide specific actions that land use agencies and local air districts should consider to prevent or reduce emissions, exposure, and risk from applicable source categories.

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Potential Actions by Land Use Agencies

Land use agencies should also consider enhancing existing programs by incorporating the following approaches that can prevent or reduce emissions from new land use activities in communities that have cumulative air pollution impacts.

■ **CEQA**

Keeping in mind that some projects are subject to time restrictions under CEQA and State planning law, land use agencies should consider prioritizing environmental impact reviews for those project categories that they determine are likely to contribute to or be affected by cumulative air pollution impacts.²⁷

Land use agencies should also consider developing criteria for incorporation into the CEQA review process that could be used to prevent or reduce cumulative air pollution impacts. These criteria could be applied to plans or projects that are already proposed for communities exposed to high air pollution levels and health risk from multiple sources and to revise General Plans and General Plan Elements, land use policies, programs, and zoning ordinances.

Sometimes, after conducting a community process to assess public concerns regarding a project, a land use agency may find that relocation of a project would not be desirable, timely, or feasible. When that happens, land use agencies should also consider if overall plan or design strategies could be effective in reducing the community's overall pollution exposure and health risk. Such strategies could include conditional use permits, performance or design standards, and mitigation measures. Potential mitigation measures could take into account feasible, cost-effective solutions within the available resources and authority of implementing agencies.

■ **General Plan Process**

The OPR General Plan Guidelines provide an effective and long-term approach to reduce cumulative air pollution impacts. As indicated earlier, OPR has recently revised their General Plan Guidelines, particularly highlighting the importance of incorporating sustainable development and environmental justice policies in the planning process.

In conjunction with local air districts and transportation agencies, land use agencies could revise General Plan Elements to establish criteria for preventing, identifying and minimizing the air pollution impacts from such land use-based programs as traffic circulation, industrial development, housing, public services, and air quality.

²⁷ As indicated in Section 3, OPR serves as the State coordinator for several environmental programs, including CEQA. As such, it advises project proponents and land use agencies on CEQA provisions. For further information on the CEQA process, the reader should refer to the Governor's Office of Planning and Research (see <http://www.opr.ca.gov/>)

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■ **Zoning**

Zoning codes could be updated to require the separation of incompatible land uses. The use of buffer zones, which separate industrial and residential land uses, should be considered. Subsequent to a zoning change, local land use agencies could work with community planning groups and community residents to determine whether and under what time-frame non-conforming uses should be relocated out of the area.

■ **Assessment Tools**

Land use agencies might want to consider a tiered approach for identifying and addressing communities with a cumulative air pollution impact, moving from a more generic qualitative approach to increasingly more sophisticated analysis if needed as the potential size of the impact becomes clearer. Approaches could take into account the use of qualitative assessment tools when data or technical resources are not available. Section 10 has more information on different levels of analysis that a land use agency should consider.

In addition, the land use agency should consider levels of action that might be commensurate with the degree of potential harm to the community and the relative emissions contribution from sources in the community.

■ **Sensitive Receptor Locations**

A land use planning agency should consider the use of zoning requirements or development standards for projects likely to have sensitive receptors located in a community that already is adversely affected by cumulative air pollution impacts.

Strategies that should be considered include property setbacks or buffer zones, air filtration designs in the sensitive receptor location, traffic flow enhancements, reduced truck or school bus idling, public transportation fleet replacement with cleaner fueled vehicles, additional control measures and least or non-toxic alternatives for facilities in designated areas, performance standards that result in less toxic building materials for new sensitive receptor locations, etc.

■ **Enforcement**

Land use agencies should consider increasing site inspections, conditional use permits, or reporting requirements to reduce permit violations in communities with a cumulative air pollution impact. Depending on the business operation, the land use agency should consider working with the local air district to incorporate permit conditions into air district permits. Such a situation could occur if the land use agency imposes a restriction that is more stringent than the air district regulation.

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■ **Information Clearinghouse**

Land use agencies should consider the creation of a statewide clearinghouse that would allow the public and project proponents to get information on how other communities with cumulative air pollution impacts have evaluated and addressed these problems.

■ **Financial Incentives**

Local land use agencies should consider the creation of financial incentives for use in communities with cumulative air pollution impacts. Such incentives might be used to reduce emissions beyond what is required under zoning ordinances or air pollution control regulations, or to fund clean, non-diesel transportation alternatives.

Concepts for Consideration by Local Air Districts

In addition to strategies that land use agencies should consider to reduce cumulative air pollution impacts, local air districts should also consider enhancing existing programs by incorporating micro-scale, or community-based actions that can prevent or reduce emissions from permitted or regulated sources in these communities. Some actions that local air districts should consider include those programmatic and regulatory items included in Table 13-2.

ARB urges local air districts to consider these and other pollution control options that they may have under development to reduce cumulative air pollution emissions, exposure, and health risk impacting affected communities. As part of an initiative to examine cumulative air pollution impacts in communities in the South Coast Air Basin, the SCAQMD has developed a White Paper that contains a suite of control strategies for possible implementation. These include:

- More stringent requirements for new sources located near sensitive receptors;
- Yard hostler controls at ports, rail yards, and distribution centers;
- Privately-owned motor vehicle fleet regulation;
- Increased compliance assurance for repeat emission violations;
- Prioritized CEQA document review for project categories most likely to contribute to or be affected by cumulative air pollution impacts;
- Voluntary AQMD/local government/public agency partnership;
- Truck and train idling restrictions;
- Marine and airport operations restrictions;
- More stringent requirements for air toxics facilities near sensitive receptors;
- Pollution prevention initiatives;
- Neighborhood air toxic abatement fund;
- Additional controls for sources of air toxics, such as auto body shops;
- Diesel traffic flow control;
- Analysis and mitigation for sources contributing to cumulative air pollution impacts;
- Increased or targeted funding for disproportionate impacted areas.

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**Table 13-2
PROGRAMMATIC ACTIONS FOR CONSIDERATION
BY LOCAL AIR DISTRICTS TO ADDRESS
CUMULATIVE IMPACTS FROM AIR POLLUTION**

Information Collection

- Improve emission inventories, air monitoring data, and analysis tools
- Identify areas with high cumulative air pollution impacts
- Investigate potential for cancer and non-cancer health effects
- Identify areas with high incidence rate of air pollution-related disease
- Encourage additional local exposure studies to assess cumulative air pollution impacts and assess effects of air toxic emission reduction programs

Emission Reduction Strategies

- Prioritize rulemaking calendar to develop regulations within legal authority to reduce cumulative impacts
- Adopt rules within legal authority to reduce cumulative impacts from mobile sources and fuels
- Develop and adopt additional mitigation measures for stationary and areawide sources of air pollution
- Develop and launch pollution prevention initiatives
- Set toxic air pollutant emission reduction goals
- Institute abatement fund programs for achieving emission reductions beyond the level achievable through T-BACT to reduce near-source air pollution impacts

Permit Considerations

- Provide guidance to local governments and planners on minimizing cumulative impacts of air pollutants
- Develop and incorporate health and risk-based distance siting criteria into source-specific rules
- Support more stringent permit requirements for new and existing sources
- Enhance scrutiny for permit renewals for facilities with multiple violations or frequent complaints from the public
- Enhance scrutiny for facilities in impacted areas that are adjacent to sensitive receptors
- Include consideration of cumulative air pollution impacts in CEQA EIR review

Other Approaches

- Enhanced enforcement for high emissions and health-risk facilities
- Identify and secure funding for high priority mobile source emission reduction projects

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Actions Undertaken by the Air Resources Board

ARB provides a framework for incorporating environmental justice policies into virtually every ARB program, including motor vehicles, consumer products, air-quality planning, toxics, research, education, enforcement, and air monitoring. These programs and policies apply to all communities in California 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 these communities.

ARB's strategies are intended to result in better air quality and reduced 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 susceptible to illness.

Over the next two years, the ARB will embark upon an ambitious schedule to reduce emissions from source categories within our regulatory authority. As indicated earlier, ARB will provide analytical tools and information to land use agencies and local air districts to assess cumulative air pollution impacts. The ARB is also committed to address pollution that contributes to violations of the federal and State air quality standards for ozone and particulate matter. Moreover, along with local air districts, ARB will continue to address air toxics emissions from regulated sources (see Table 13-3 for a summary of actions under ARB consideration).

While statewide in nature, ARB's strategies will also result in substantial air quality improvement in localized areas. The ARB will propose regulations to address emissions from mobile sources such as extended idling from vehicles, trucks, and buses, exhaust and evaporative emissions from small off-road engines, solid waste collection vehicles, and on- and off-road diesel and gasoline engines. In addition, the ARB will consider regulations that address emissions from fuels including vehicle lubricating oils, compressed natural gas and liquefied petroleum gas, portable fuel containers and spouts, reformulated fuels, and fuel additives. Statewide measures will also address emissions from areawide sources such as household cleaning products and personal care products.

The ARB will also consider the adoption of several ATCMs including stationary diesel engines, fuel delivery tanker trucks, portable engines, transport refrigeration units, thermal spraying, chrome plating and chromic acid anodizing, welding operations, harbor craft, formaldehyde from composite wood products, and amendments to perc dry cleaning.

As part of its effort to reduce particulate matter and air toxics emissions from diesel PM, the ARB's Diesel Risk Reduction Plan lays out several strategies in a 3-pronged approach to reduce emissions and their associated risk from diesel PM:

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**Table 11-3
PROGRAMMATIC ACTIONS THAT ARB WILL TAKE TO ADDRESS
CUMULATIVE IMPACTS FROM AIR POLLUTION**

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 land use strategies implemented at the local level

Emission Reduction Approaches

- Develop and/or amend ATCMs and related guidance to prevent or reduce air toxic emissions at a statewide and local level for the following sources:
 - Diesel PM sources such as stationary diesel engines, fuel delivery cargo tankers, transport refrigeration units, portable diesel engines, on-road public fleets, off-road public fleets, heavy-duty diesel truck idling, harbor craft vessels, diesel fuel and 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 supplements and guidance documents for the following:*

 - Modeling tools such as HARP and CHAPIS
 - Stationary diesel engines
 - Gas stations
 - Medical waste incinerators
 - Ethylene oxide sterilizers
 - Asbestos
 - Auto painting shops
 - Lead sources/risk management

- Adopt rules and pollution prevention initiatives within legal authority to reduce cumulative impacts 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

- Support additional funding for high priority mobile source emission reduction projects

*This information will be updated on an ongoing basis. For current information, see ARB's website at: (actual URL will be identified in the final draft.)

- stringent emission standards for all new diesel-fueled engines;
- aggressive reductions from in-use engines; and
- low sulfur fuel to provide PM reductions and the quality of diesel fuel needed by the advanced diesel PM emission controls.

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A few of the initial diesel risk reduction strategies include measures to reduce emissions from refuse haulers, gasoline tanker trucks, and stationary and portable diesel engines - sources that are important from a community perspective.

For those that are interested, more information on the diesel risk reduction plan can be found at: <http://www.arb.ca.gov/diesel/documents/rrpapp.htm>

The ARB also has a website that lists information on all mobile source related programs. Information on these programs can be found at:

<http://www.arb.ca.gov/msprog/msprog.htm>

The ARB will continue to evaluate the health effects of air pollutants while implementing programs with local authorities that aim at reducing levels of air pollution in communities with cumulative impacts.

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14. How can information about cumulative impacts be provided to the public?

Note: Following approval of the Cal/EPA Advisory Committee recommendations, this section will be updated.

Community involvement in the land use planning process is an important part of environmental justice. 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 related to how land use decisions can affect air pollution and community health must be made more accessible to residents of low-income and minority communities so that they can take a more active role in decisions affecting air pollution in their communities.

Effective community participation consistently relies on a free, 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 in an analysis of cumulative impacts 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 has traditionally been passive, requiring the public to take the initiative in order to participate, and with little effort invested by an agency to actively solicit participation. Many residents are concerned that even when they do participate in a public process, it has little or no impact on the agency's decision. 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 to address the concerns that are raised.

Land use agencies and local air districts should consider seeking out the public in places where they are already gathering to provide information on what local government is doing to prevent or reduce cumulative air pollution impacts. The outreach could involve presentations and briefings, distribution of printed information, or staffing an information booth. Agencies can then engage people who would not otherwise come to a formal public meeting about a local land use decision.

In conducting research on approaches for engaging public involvement, we found several State and local agencies and planning departments that are in the forefront of community outreach on issues that affect environmental justice. A sample of these

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programs and guideline documents are referenced in the Appendix (to be provided). Table 14-1 contains some general outreach approaches that might be considered.

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.
- Provide childcare services at meetings.
- Assess the need for and provide translation services at public meetings.

**Table 14-1
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 direct citizen 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
- Operating support for community-based organizations
- **Include Cal/EPA recommendations as appropriate**

- 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 environmental justice 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.
- In 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

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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 local land use agency or 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.

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