



Model General Plan Air Quality Element

May 2005



SMAQMD Mission

Achieve clean air goals by leading the region in protecting public health and the environment through innovative and effective programs, dedicated staff, community involvement and public education.

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INTRODUCTION TO THE MODEL AIR QUALITY ELEMENT

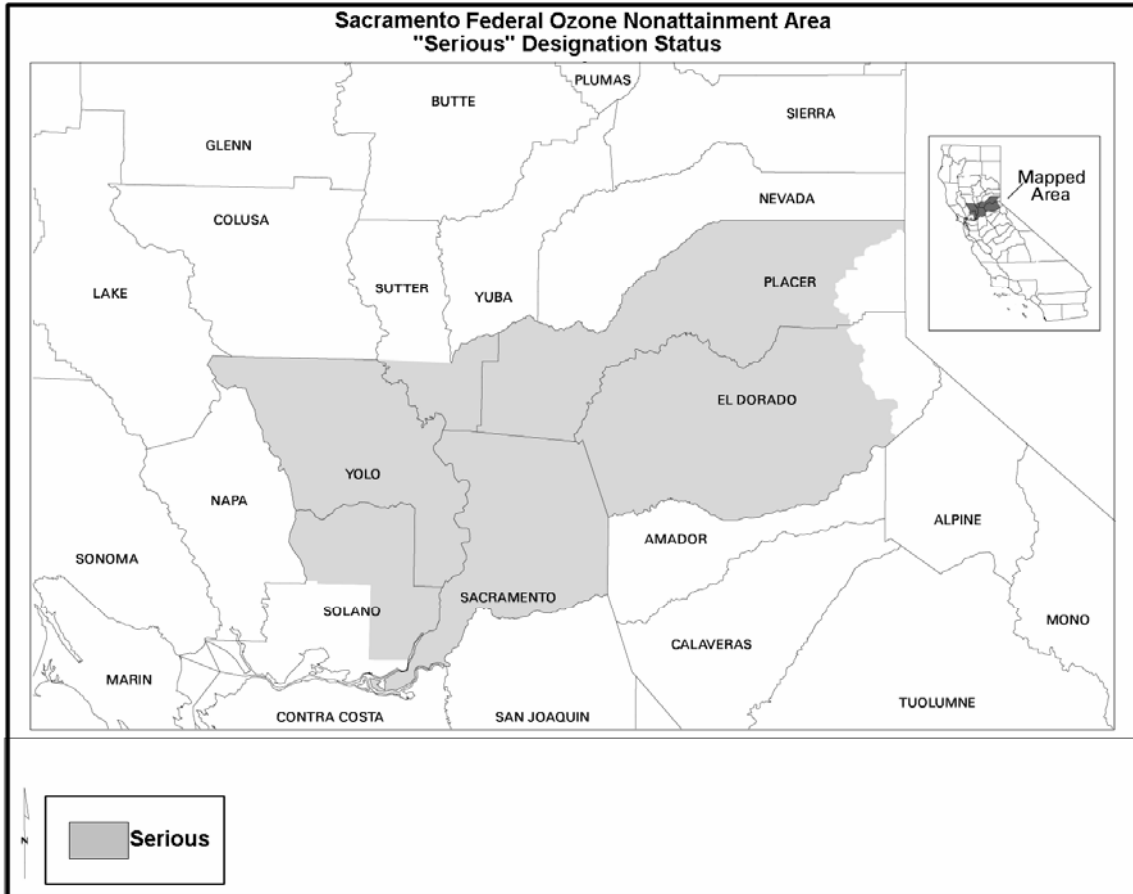
Importance of Air Quality

The quality of the air we breathe directly affects our health, environment, economy and quality of life. The Federal Clean Air Act of 1977 directed the Environmental Protection Agency to establish national ambient air quality standards (NAAQS). Primary standards protect public health. Secondary standards protect public welfare associated with the presence of contaminants in the ambient air. States that contain areas that exceed the standards must submit State Implementation Plans for attainment of the standards in those areas. The purpose of the State Implementation Plans is to ensure attainment of primary NAAQS as expeditiously as possible, but no later than the specified attainment deadline.

A “nonattainment” designation indicates that a pollutant concentration has exceeded the federal standard. Sacramento County, as well as Yolo County and portions of El Dorado, Placer, Solano, and Sutter counties, comprise the Sacramento Federal Ozone Nonattainment Area (SFNA), which is classified as a “serious” nonattainment area for the federal eight hour ambient air quality standard for ozone (Figure 1). While Sacramento County is designated as nonattainment for state and federal respirable particulate matter (PM₁₀) standards, the USEPA has determined that Sacramento County has not violated the NAAQS since 1990. Additionally, Sacramento County is designated nonattainment for the state fine particulate matter (PM_{2.5}) standard. However, in June 2004, the USEPA proposed to classify Sacramento County in attainment of the federal PM_{2.5} standards.

Although the Sacramento area currently does not meet the federal ozone standard, it has made significant progress towards attainment. Air quality is a regional issue, but there are steps that both regional and local governments can take to improve air quality and to avoid adverse localized air pollution impacts. Local efforts over the past two decades have contributed to the improvement in air quality, and will continue to play an important role in achieving federal and state air quality standards.

Figure 1:



Criteria Pollutants

The United States Environmental Protection Agency (EPA) and California Air Resources Board (ARB) have established national and state ambient air quality standards, respectively, for pollutants generally known as "criteria pollutants." These pollutants include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead. For some of these pollutants, notably ozone and particulate matter, the state standards are more stringent than the national standards. The EPA and ARB have outlined thresholds for ozone and particulate matter emissions levels (Figure 2).

The concentration of ground level ozone is greatest on warm, windless, sunny days, and is often accompanied by temperature inversions. Ozone forms through chemical reactions between volatile organic compounds (VOC) and oxides of nitrogen (NO_x). These reactions occur over time in the presence of sunlight. High levels of ozone create a public health concern because it increases susceptibility to respiratory infections and diseases, and increases the risk of cardiac disorders. The principal sources of VOC and NO_x are the combustion of fuels and the evaporation of solvents, paints, and fuels. In

the Sacramento Region, over 70% of these ozone precursors are produced from motor vehicles.

Airborne dust contains respirable particulate matter (PM₁₀), which consists of particles or droplets less than 10 microns in diameter. PM₁₀ emissions are caused by road dust, diesel soot, combustion products, tire and brake abrasion, construction operations, and fires. The level of PM₁₀ in the air is a public health concern because it can bypass the body's natural filtration system more easily than larger particles, and can lodge deep in the lungs causing respiratory problems and permanent lung damage. It also scatters light and significantly reduces visibility. Fine particulate matter (PM_{2.5}) is defined as extremely small suspended particles or droplets with a diameter of less than 2.5 microns. PM_{2.5} consists mostly of combustion byproducts from the reaction of exhaust sulfates and nitrates, along with finer dust particles. It is more closely linked to adverse health effects, and contributes to hospital and emergency room visits and is associated with asthma, bronchitis, cardiac arrhythmia, heart attack, and premature death.

Figure 2:

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards		Federal Standards		
		Concentration	Method	Primary	Secondary	Method
Ozone (O ₃)	1 Hour	0.09 ppm (180 µg/m ³)	Ultraviolet Photometry	0.12 ppm (235 µg/m ³)	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	—		0.08 ppm (157 µg/m ³)		
Respirable Particulate Matter (PM ₁₀)	24 Hour	50 µg/m ³	Gravimetric or Beta Attenuation	150 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m ³		50 µg/m ³		
Fine Particulate Matter (PM _{2.5})	24 Hour	No Separate State Standard		65 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m ³	Gravimetric or Beta Attenuation	15 µg/m ³		

Note: Partial list of pollutants is shown above
 Source: California Air Resources Board – July 9, 2003
<http://www.arb.ca.gov/aqs/aaqs2.pdf>

Toxic air contaminants (TACs) are air pollutants which may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health. While ambient air quality standards have not been established for the hundreds of identified toxic air contaminants (TACs), exposure to these pollutants can cause or contribute to chronic health effects. Exposure to TACs during infancy or childhood could affect the development of the respiratory, nervous, endocrine or immune systems – increasing the risk of cancer later in life. Short-term effects of TACs include irritation to the eyes, nose, throat, and lungs and can result in coughing, headache, dizziness, and nausea. Long-term contact is associated with increased risks of developing cancer, lung diseases such as asthma, damage to the immune system,

and allergies. Of all the toxic air contaminants measured in ARB's monitoring network, diesel particulate matter has been found to contribute the greatest overall statewide risk to public health; furthermore, proximity and long-term exposure to diesel emissions have been proven to increase the risk of lung cancer by as much as 40 percent. Motor vehicles are the primary source of the top three toxic air contaminants, thus contributing to the risk of developing adverse health effects in the Sacramento Region.

Causes of Poor Air Quality

The Sacramento Region's poor air quality can largely be attributed to emissions from anthropogenic and natural sources, Central Valley geography, and meteorological settings. Anthropogenic sources include air pollution emissions from stationary, area and mobile sources. Natural sources include biogenic hydrocarbons, natural wind-blown dust and wildfires.

The Sacramento nonattainment area is located within the boundaries of the Sacramento Valley Air Basin, bounded by the Coast Ranges on the west and Sierra Nevada Mountains on east. The intervening terrain is flat, providing a place for air pollutants to settle. The mountains surrounding the Sacramento Valley create a barrier to airflow, which can trap air pollutants in the Valley when meteorological conditions are right. The surface concentrations of pollutants are highest when temperature inversions trap pollutants near the ground.

Air Quality Element Authority

The Air Quality Element is consistent with State Government Code Section 65303, which states that "the general plan may include any other elements or address any other subjects which, in the judgment of the legislative body, relate to the physical development of the county or city." The Air Quality Element identifies and establishes the policies governing the achievement and maintenance of acceptable air quality.

The Need for Air Quality Elements in the Sacramento Region

As identified above, this Air Quality Element explains the role local jurisdictions play in helping the Sacramento nonattainment area achieve the goal of meeting federal and state health-based air quality standards. Furthermore, this Element emphasizes the significance that land use patterns and resulting transportation behavior have on air quality. The policies outlined in this Element focus primarily on "smart growth" development and secondarily on transportation demand management.

With the Sacramento Region among the nation's top twelve areas with degraded air quality, the need to decrease the level of air pollutants in the Region's cities is great. The creation of a separate Air Quality Element within the General Plan recognizes that

air quality is an important local and regional concern. Just as issues of land use, circulation, open space, conservation, noise, housing, and safety are essential to a community's well-being, the issue of air quality is a critical component in the planning process.

The policies contained in this Air Quality Element offer an effective way to reduce local and regional air pollution, and the enforcement of these essential guidelines will help ensure the health of people locally and throughout the greater Sacramento Region.

AQ I – LAND USE STRATEGIES

Policies: Environmental Justice

AQ 1 Ensure that all land use decisions are made in an equitable fashion in order to protect residents – regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location – from the health effects of air pollution.

Policies: Land Use Patterns for Businesses

AQ 2 Encourage strategic land use patterns for businesses that reduce the number and length of motor vehicle trips, and that encourage alternative modes of travel.

AQ 3 Encourage employment-intensive development with a high Floor Area Ratio where adequate transit service is planned, and discourage such development where adequate transit service is not planned.

AQ 4 Support the location of ancillary employee services (including, but not limited to, child care, restaurants, banking facilities, convenience markets) at major employment centers for the purpose of reducing midday vehicle trips.

Policies: “Smart Growth” Planning

AQ 5 Promote compact development within 1/4 to 1/2 mile of rail transit stations and bus transit corridors.

AQ 6 Promote mixed-use developments inclusive of homes, schools, civic uses, retail and commercial services, and daycare facilities within walking distance of each other.

AQ 7 Promote growth within existing urban areas (infill) as a priority over urban expansion, where appropriate.

AQ 8 Identify and adopt incentives for planning and implementing infill development projects within urbanized areas near job centers and transportation nodes.

AQ 9 Support land use, transportation management, infrastructure and environmental planning programs that reduce vehicle emissions and improve air quality.

AQ 10 Promote street design that provides an environment which encourages biking and walking.

Policies: Project Design Guidelines

AQ 11 Encourage all new development to be designed to promote pedestrian and bicycle access and circulation, to the greatest extent feasible.

AQ 12 Preserve and ensure the dedication of rights-of-way and station sites for future light rail extensions and/or Bus Rapid Transit, where necessary.

AQ 13 Recommend the use of traffic calming measures where appropriate within a subdivision plan (e.g., traffic circles, curb extensions, and median islands).

AQ 14 Coordinate with the Sacramento Metropolitan Air Quality Management District on the review of proposed development projects.

AQ 15 All new development projects which have the potential to result in substantial air quality impacts shall incorporate design or operational features that result in a reduction in emissions equal to 15 percent from the level that would be produced by an unmitigated project, based upon feasible mitigation under CEQA.

AQ 16 Maximize air quality benefits through selective use of landscaping vegetation which is low in emission of volatile organic compounds (VOC), and through re-vegetation of appropriate areas.

AQ II – TRANSPORTATION

Policies: Trip Reduction

AQ 17 Promote and adequately advertise for shuttles from local transit stations to special event centers.

AQ 18 Encourage employers to provide transit subsidies, bicycle facilities, and alternative work schedules, ridesharing, telecommuting and work-at-home programs, employee education, and preferential parking for carpools/vanpools.

AQ 19 Ensure that, wherever feasible, public transit is a viable and attractive alternative to the use of single occupant motor vehicles.

Policies: Transportation Demand Management (TDM)

AQ 20 Encourage commercial, retail, and residential developments to participate in or create Transportation Management Associations.

AQ 21 Encourage business owners to schedule deliveries at off-peak traffic periods.

AQ 22 Provide disincentives for single-occupant vehicle trips through parking supply and pricing controls in areas where supply is limited and alternative transportation modes are available.

AQ 23 Support the development of County Service Areas in order to create funding for transportation services that provide air quality benefits.

Policies: Encourage the Use of Low-Emission Vehicles

AQ 24 Replace City fleet vehicles with lowest emission technology vehicles, wherever possible.

AQ 25 Encourage lowest emission technology buses in public transit fleets.

AQ 26 Consider adoption of a policy that provides a preference to contractors using reduced emission equipment for City construction projects as well as for City contracts for services (e.g., garbage collection).

AQ 27 Encourage developments and street systems that support the use of Neighborhood Electric Vehicles (NEV).

Policies: Advocacy

AQ 28 Advocate to the state and federal government for improved emission standards.

AQ 29 Support legislation which promotes cleaner industry, lowest emission technology vehicles and more efficient burning engines and fuels.

AQ III – REDUCTION OF CONSTRUCTION / HEAVY-DUTY EQUIPMENT EMISSIONS

Policies: Control Measures

AQ 30 Consider adoption of an ordinance that limits the amount of time diesel-powered trucks, buses, and other heavy vehicles may idle.

AQ 31 Enforce construction related air quality mitigation measures adopted through the CEQA process.

AQ IV – ENERGY CONSERVATION

Policies: Efficiency Measures

AQ 32 All City facilities should consider incorporation of feasible energy-conserving design and construction techniques.

AQ 33 Promote criteria for all new parking lots to include tree plantings that will result in 50% shading of parking lot surface areas within 15 years.

AQ 34 Encourage the use of building materials and methods that increase efficiency beyond State Title-24 standards.

AQ 35 Encourage the use of “EPA Energy Star” certified appliances, such as water heaters, swimming pool heaters, cooking equipment, refrigerators, furnaces and boiler units, where feasible.

AQ 36 Encourage the implementation of cost-effective and innovative emission-reduction technologies in building components and design.

AQ 37 Promote the implementation of sustainable design strategies for “cool communities” such as reflective roofing, light colored pavement, and urban shade trees.

AQ V – PUBLIC EDUCATION

Policies: Promote Awareness

AQ 38 Encourage employers to participate in SMAQMD public education programs.

AQ 39 Encourage businesses to provide employees with information on alternatives to single-occupancy driving (e.g., offer literature on the Transit 511 program to support carpooling).

AQ 40 Provide air quality information through the City's website, including links to SMAQMD and CARB public information.

AQ 41 Support infrastructure and programs that encourage children to safely walk or ride a bicycle to school.