

Model General Plan Air Quality Element

Butte County Air Quality
Management District

January 2008

Butte County Air Quality Management District Mission

Our mission is to protect the people and environment of Butte County from the effects of air pollution through developing and implementing programs and regulations to improve our air quality.

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INTRODUCTION TO THE MODEL AIR QUALITY ELEMENT

Importance of Air Quality

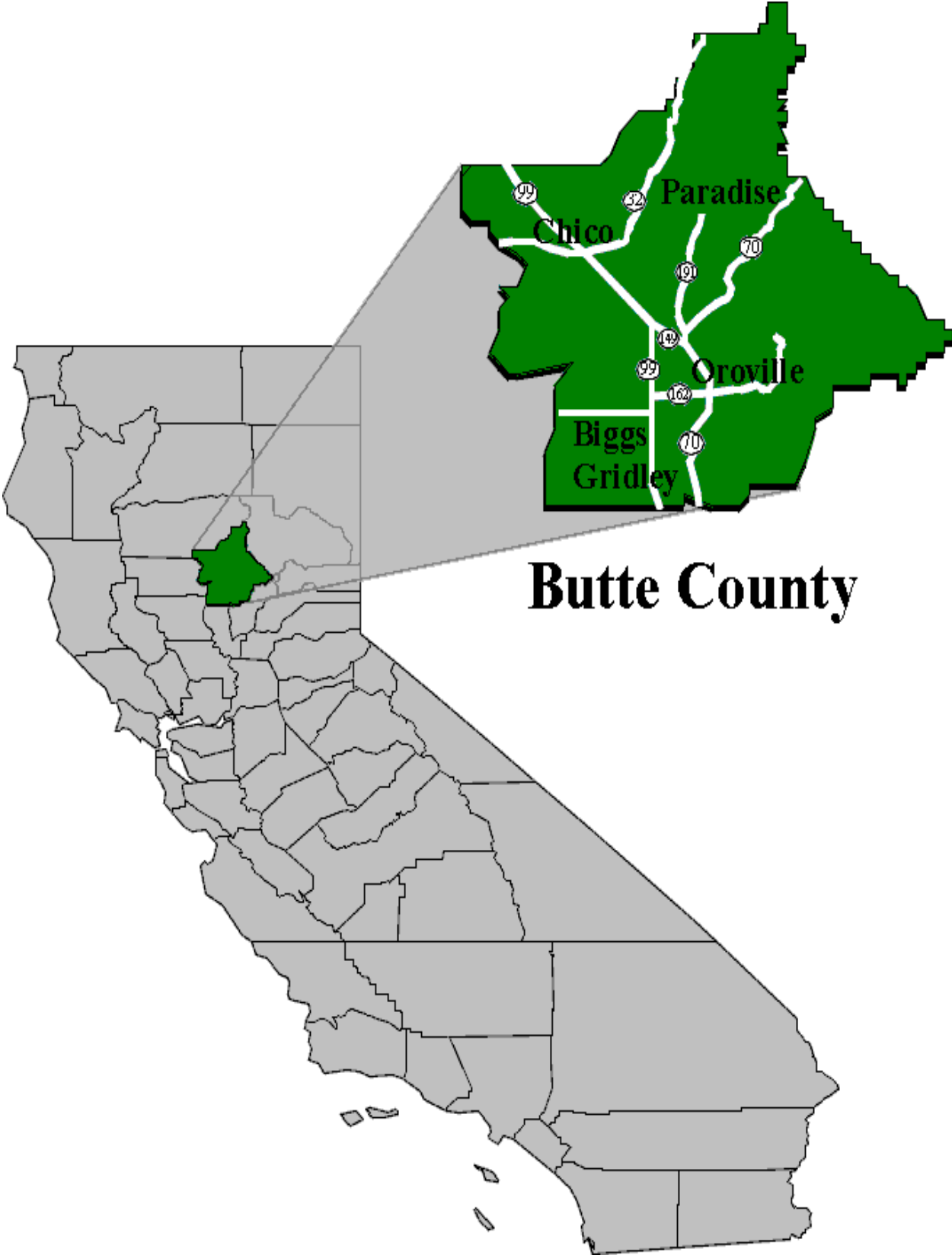
The quality of the air we breathe directly affects our health, environment, economy and quality of life. Improvements to our air quality have been realized through the design and production of cleaner motor vehicles, stronger pollution controls in industrial applications, and open burning regulations. While growth is expected, and the numbers of emission sources and vehicles increase, air pollution will continue to be a concern to our citizens. 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 Plan 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. Butte County is a nonattainment area for the federal eight hour ambient air quality standard for ozone.

The State of California has also established state ambient air quality standards. Butte County is designated as nonattainment for the State respirable particulate matter (PM₁₀) standard, fine particulate matter (PM_{2.5}) annual standard, and ozone standard. In addition, the City of Chico is expected to be designated nonattainment for the Federal PM_{2.5} 24-hour standard to be finalized by U.S. EPA in April 2009.

Although Butte County currently does not meet the State and federal ozone and PM standards, it has made 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. The County and municipalities are encouraged to consider measures to protect our air quality as land use strategies are planned through the local General Plan process. Figure 1 Map of Butte County.

Figure 1 Map of Butte County



Criteria Pollutants

The United States Environmental Protection Agency (EPA) and the 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 generally 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 California, 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

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards ¹		Federal Standards ²		
		Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,6}	Method ⁷
Ozone (O ₃)	1 Hour	0.09 ppm (180 µg/m ³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m ³)		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		—		
Fine Particulate Matter (PM _{2.5})	24 Hour	No Separate State Standard		35 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 – 2-22-07
<http://www.arb.ca.gov/aqs/aqs2.pdf>

Toxic Air Contaminants

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.

Causes of Poor Air Quality

Poor air quality can largely be attributed to emissions from anthropogenic and natural sources, Sacramento 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.

Butte County 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. The region is largely agricultural in nature, but as California's population grows and communities expand, there is expected growth in residential and industrial development.

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.” While it is not a mandatory component of the General Plan, 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 Butte County

As identified above, this Air Quality Element explains the role local jurisdictions play in helping Butte County 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.

The creation of either a separate Air Quality Element within the General Plan or the integration of air quality policies within the existing General Plan framework 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.

What Cities and Counties Can Do

Leaders of local government in Butte County are in the position of engaging in and guiding multi-disciplinary collaboration between competing interests for development, growth and the enhancement of community quality of life. Community groups, businesses, developers and individuals present a complex environment which may result in conflicting interests, and can affect policy decisions and future planning issues.

In order to achieve balanced growth, local government leaders can show support of smart growth principles through comprehensive planning that transforms stakeholder wishes into a cohesive community vision. Development of policies and processes for implementation of these visions is essential.

Return benefits can be in the form of a unified framework to reduce infrastructure costs, improve services, and support of a vibrant economy which addresses social concerns as well as preserving natural resource.

Local governments have the flexibility to address air quality issues through ordinances, local circulation systems, transportation services, and land use. The District has authority to reduce emissions from stationary sources, some area sources, and certain indirect sources. In coordinating efforts with Butte County Association of Governments (BCAG) and CARB, planning for future growth projections and the development and implementation of transportation control measures as well as the control measures for mobile sources will provide the District with a foundation necessary to apply a positive approach to improving air quality and protecting our citizens.

Persuading people to use alternatives to their car is a difficult task. This task is made harder by the prevalent design of our communities. For the last fifty years or so, we have designed and built our communities for the efficient use of the automobile at the expense of alternatives to the automobile. The first step in reversing this trend is to ensure that the General Plan, which guides the development of our communities, supports walking, bicycling, and transit for more of our transportation needs.

This document provides a comprehensive set of policies that promote development patterns, site designs, and transportation systems that support alternatives to the automobile. Additionally, it promotes the idea of incentives for smart growth development. Cities and counties can use this information as a resource during general plan updates. They can select policies appropriate for addressing the issues and concerns of their individual communities. As development occurs in a manner consistent with air quality policies, local government control measures will be more effective and growth in vehicle trips and vehicle miles traveled will be reduced.

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 throughout Butte County.

AQ I – LAND USE STRATEGIES (Land Use Element)

Policies: Land Use Patterns for Businesses

- AQ1 Encourage strategic land use patterns for businesses that reduce the number and length of motor vehicle trips, and that encourage alternative modes of travel.
- AQ2 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.
- AQ3 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.
- AQ4 Ensure industrial, manufacturing, and processing facilities are located an adequate distance from residential areas and other sensitive receptors.

Policies: “Smart Growth” Planning

- AQ5 Promote projects that are developed through a collaborative and inclusive planning process that includes broad partnerships among a variety of stakeholders.
- AQ6 Promote compact development within 1/4 to 1/2 mile of bus transit corridors.
- AQ7 Promote mixed-use developments inclusive of homes, schools, civic uses, employment, retail and commercial services, and daycare facilities within walking distance of each other, that are well-served by transit, or will help build the capacity for future transit investment and use.
- AQ8 Support a community’s infill or transit-oriented development and neighborhood revitalization activities as a priority over urban expansion, where appropriate.
- AQ9 Identify and adopt incentives for planning and implementing infill development projects within urbanized areas near job centers and transportation nodes.
- AQ10 Support land use, transportation management, infrastructure and environmental planning programs that reduce vehicle emissions and improve air quality.
- AQ11 Promote street design that provides an environment which encourages biking and walking by adding or enhancing pedestrian, transit and/or bicycle facilities, and by strengthening the links between these facilities and between these facilities and major activity nodes.

Policies: Project Design Guidelines

- AQ12 Encourage all new development to be designed to promote pedestrian and bicycle access and circulation, to the greatest extent feasible.
- AQ13 Support the location of neighborhood commercial shopping areas to serve new residential development.
- AQ14 Recommend the use of traffic calming measures where appropriate within a subdivision plan (e.g., traffic circles, curb extensions, and median islands).
- AQ15 Coordinate with the Butte County Air Quality Management District on the review of proposed development projects.
- AQ16 All new development projects which have the potential to result in substantial air quality impacts should incorporate design or operational features that result in a reduction in emissions below the significance threshold levels that would be produced by an unmitigated project, based upon best available mitigation measures under CEQA.
- AQ17 Provide incentives to encourage developers and investors to implement smart growth types of designs.
- AQ18 Provide incentives to cities and the county for planning and encouragement of smart growth development.
- AQ19 Provide incentives to encourage local communities or neighborhoods that are required to accept change.
- AQ20 Where emissions from new development cannot be mitigated on-site, off-site mitigations should be considered as appropriate, coordinating with the Butte County Air Quality Management District.
- AQ21 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.
- AQ22 Evaluate greenhouse gas emissions and mitigate to the extent possible.
- AQ23 Evaluate projects for cumulative impacts and apply appropriate impact fees to help offset mitigations, public outreach, and compliance assistance programs.

Policies: Control Measures

- AQ24 Work with the District to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible.
- AQ25 Enforce fugitive dust related air quality mitigation measures adopted through the CEQA process.

Policies: Environmental Justice

- AQ26 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: Toxic and Hazardous Emissions

- AQ27 Ensure residential development projects and projects categorized as sensitive receptors to be located an adequate distance from existing and potential sources of toxic emissions such as freeways, major arterials, industrial sites, and hazardous material locations.
- AQ28 Enforce the Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operation, and the ATCM for Surfacing Applications.

AQ II – TRANSPORTATION (Circulation Element)

Policies: Trip Reduction and Transportation Demand Management

- AQ29 Ensure that, wherever feasible, public transit is a viable and attractive alternative to the use of single occupant motor vehicles through the promotion and expansion of a public transit system.
- AQ30 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.
- AQ31 Promote and adequately advertise for shuttles from local transit stations to special event centers.
- AQ32 Encourage business owners to schedule deliveries at off-peak traffic periods.
- AQ33 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.
- AQ34 Support the development of Service Areas (i.e. County or municipality) in order to create funding for transportation services and road improvements that provide air quality benefits.
- AQ35 Encourage transportation policy that gives funding preferences to public transit.
- AQ36 Encourage transportation impact fees on new development in order to facilitate and increase public transit service.
- AQ37 Incorporate bicycle lanes into street systems in regional transportation plans, subdivisions and large developments.

Policies: Encourage the Use of Low-Emission Vehicles

- AQ38 Replace County or municipality fleet vehicles with lowest emission technology vehicles, wherever possible.
- AQ39 Encourage lowest emission technology buses in public transit fleets.
- AQ40 Consider adoption of a policy that provides a preference to contractors using reduced emission equipment for County or municipality construction projects as well as for contracts for services (e.g., garbage collection).
- AQ41 Encourage developments and street systems that support the use of Neighborhood Electric Vehicles (NEV).

AQ III – ENERGY CONSERVATION (Conservation Element)

Policies: Efficiency Measures

- AQ42 All County and municipality facilities should consider incorporation of feasible energy-conserving design and construction techniques.
- AQ43 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.
- AQ44 Encourage the use of building materials and methods that increase efficiency beyond State Title-24 standards, such as efficient lighting, reduction of water to sewer systems and incorporating water reuse systems.
- AQ45 Encourage solar technology in new construction where feasible.
- AQ46 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.
- AQ47 Encourage the implementation of cost-effective and innovative emission-reduction technologies in building components and design.
- AQ48 Promote the implementation of sustainable design strategies for “cool communities” such as reflective roofing, light colored pavement, and urban shade trees.
- AQ49 Expand city and county recycling services and programs for residents and businesses.
- AQ50 Encourage projects to reuse and recycle construction and demolition waste.