
IV. AIR QUALITY AND CLIMATE CHANGE ELEMENT



~~2025~~
2035

AIR QUALITY AND CLIMATE CHANGE

Roseville currently suffers from poor air quality caused by locally-generated and imported air pollutants that combine with unfavorable topographic and meteorological conditions. These local environmental conditions are exacerbated by Roseville's location adjacent to and downwind of the Sacramento metropolitan area the Sierra Nevada mountain range and inversion layers that trap pollutants in the Sacramento valley.

In addition to general air quality issues, there is now a general consensus in the scientific community that climate change is occurring. The potential effects of climate change are extensive, and have been well publicized. Although actions taken on a local level cannot resolve this global issue, the City of Roseville implements policies that address energy and resource conservation, and compact community design. These policies reduce greenhouse gas emissions, counteract global warming, and work to reduce the potential adverse effects of global warming.

To protect the well being of its citizens, the City of Roseville recognizes the importance of establishing goals and policies to improve air quality and address climate change. As a result, the City has elected to include the Air Quality Element as an optional element to the General Plan. The Air Quality Element is a focus for General Plan air quality policy, integrating related land use, transportation and circulation, transit, safety, and energy issues. The Air Quality Element's policies and programs are intended to

improve air quality, address climate change, and encourage cooperation between the jurisdictions involved in regional air quality improvement efforts.

It is the overall goal of the Air Quality Element to protect the health and welfare of the community by promoting development that is compatible with air quality standards, and reflects the City's commitment to sustainable practices.

A. SETTING

General Air Quality

The California and Federal Clean Air Acts establish air quality standards for several pollutants and require jurisdictions for areas that violate these standards to prepare and implement plans to achieve the standards by certain deadlines. Table IV-1 summarizes Placer County and the Roseville area's state and federal attainment status with regard to the criteria pollutants. The Roseville area is a non-attainment area for the state and federal ozone standards and for the state standards relating to particulate matter smaller than or equal to 10 microns in diameter (PM₁₀). The portion of the Sacramento Valley Air Basin that includes Roseville (as shown on Figure IV-1) is designated as an attainment area for CO (Carbon Monoxide). The Mountain Counties Air Basin remains unclassified.

Given their status in relation to state and federal standards, PM₁₀, CO and ozone are the primary focus of air quality efforts in the region.

Each of the three primary pollutants is described below:

- **PM₁₀** - Health concerns associated with suspended particles focus on those particles small enough to reach the lungs when inhaled. Few particles larger than 10 microns in diameter reach the lungs. The primary sources of PM₁₀ are road dust and construction/demolition activities.
- **CO** - CO levels are a public health concern because CO combines readily with hemoglobin and thus reduces the amount of oxygen transported into the blood stream. CO is primarily a winter pollution problem. Motor vehicle emissions are the dominant source of CO in most areas. As a directly-emitted pollutant, transport away from the emission source is accompanied by dispersion and reduced pollution concentrations. Consequently, CO problems are usually located near congested intersections, often the result of a combination of high traffic volumes and traffic congestion.
- **Ozone** - Ozone is a public health concern because it is a respiratory irritant that increases human susceptibility to respiratory infections. Ozone, the main component of photochemical smog, is primarily a summer and fall pollution problem. Ozone is not emitted directly into the air but is formed through a complex series of chemical reactions including other compounds that are directly emitted. These directly-emitted pollutants (also known as ozone precursors) include reactive organic gases (ROG) and nitrogen oxide (NO_x). The period required for ozone formation allows the reacting compounds to be spread over a large area, producing a regional pollution problem. Ozone problems are the cumulative result of regional development patterns rather than the result of a few significant emission sources.

Roseville is located in the Sacramento Valley air basin portion of Placer County (Figure IV-1). Given its location, climate, topography and

prevailing winds, the area receives a considerable amount of pollutants generated elsewhere in the Sacramento metropolitan area.

According to the California Clean Air Act of 1988, the Placer County Air Pollution Control District (PCAPCD) has primary responsibility for improving air quality throughout Placer County. The California Clean Air Act requires that the PCAPCD prepare an air quality attainment plan and update it every three years. The PCAPCD's ~~2011~~ 2003 Air Quality Attainment Plan contains several strategies for bringing all of Placer County, including Roseville, into compliance with the California ambient ozone standards. These include strategies to reduce emissions from both stationary and mobile sources. Portions of Placer County are included in the Sacramento Federal Ozone Non-Attainment Area (SFONA). The SFONA has been classified as "severe" nonattainment for the National Ambient Air Quality Standard (NAAQS) for eight-hour ozone, as well as non-attainment with the State of California Ambient Air Quality Standard for ozone.

The ~~2003-2011~~ 2003 Air Quality Attainment Plan contains measures to improve air quality and recognizes the need for cooperation from all jurisdictions within the county. One area in which the PCAPCD seeks cooperation from cities is in updating general plans. When cities update their general plans, the PCAPCD requests that they include specific air quality element language ~~(described in the 2003 Air Quality Attainment Plan).~~

Roseville's Air Quality Element contains the goals, policies, and implementation measures described in the PCAPCD ~~1994-2011~~ 2003 Air Quality Attainment Plan. Additional language has been added to the element to address other issues important to the citizens of Roseville.

Global Climate Change

Global climate change is defined as the progressive gradual rise of the Earth's average surface temperature thought to be caused in part by increased concentrations of green house gases (GHGs) in the atmosphere. The change in the average weather of the earth can be measured by wind patterns, storms, precipitation, and temperature. It is exacerbated by greenhouse gases, which trap heat in the

atmosphere (thus the “greenhouse” effect). Greenhouse gases include carbon dioxide (CO₂), methane (CH₄), nitrous oxide N₂O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆), and are emitted by both natural processes and human activities.

The projected effects of climate change cover a broad spectrum of impact areas:

Human health:

- Exposure to air pollution
- Exposure to infectious diseases due to changing ecosystems and climate
- Weather-related mortality (flooding)

Water Resources:

- Changing rainfall and snow pack issues
- Hydrology changes in rivers and Delta
- Increasing sea level

Biological Resources:

- Changing habitat and species distribution

B. OUTLOOK

General Air Quality

Automobile use generates a large percentage (30% of ROG and 40% of NO_x) of emissions in Placer County. ~~Based on information generated by Placer County, the~~ The county's ~~County's~~ population and number of daily vehicle miles traveled are expected to increase ~~by 20% overall between 2010 and 2020~~ through 2035. It is projected that the percentage increment of pollutants resulting from automobile use will decrease over time, while the percentage attributable to other mobile and stationary sources will increase. This can partially be attributed to continued improved automobile emission standards ~~and increased in alternatives to fuel such as electric vehicles~~. Emission trends for ROG and NO_x, the two primary contributors to high ozone concentrations and the formation of photochemical smog, are shown in Figures IV-2 and IV-3. ~~Emissions projections from 2003 through 2020 indicate a declining trend. According to the PCAPCD's 2015 Triennial Progress Report, between 1990 and 2015, the overall ROG emissions declined about 47%, and NO_x emissions decreased about 43%. From 2010 to 2015, the overall ROG emissions~~

¹ Placer County Air Pollution Control District. *2003-15 Triennial Progress Report*. October 2015

~~reduced about 13% and NO_x emissions reduced about 14%. From 2015 to 2025, Overall, Placer County ROG emissions are expected to continue decreasing by about 486% and with NO_x emissions are expected to decrease about 4330%.~~¹

According to the PCAPCD 2015 Triennial Progress Report, Placer County has made considerable progress in improving air quality. Air quality indicators show overall reductions of peak ambient ozone and county-wide exposure to unhealthy concentrations since 1990. It represents that overall exposure to residents from ozone continues to decrease in Placer County. The 2015 Triennial Progress Report emissions inventory information shows a significant overall reduction of ozone precursor emissions in the 2012 through 2014 time period. The projected ROG and NO_x emission controls described in the PCAPCD's 1994-2011 Air Quality Attainment Plan are not sufficient to meet the air quality attainment standards in Placer County. While no single control or strategy will solve the problem, the PCAPCD believes that the 2015 Triennial Report demonstrates progress in the effort set forth in the control plan towards attaining the state ozone standards in accordance with the CCAA requirements. A series of aggressive, widespread steps must be taken to reduce emissions of both stationary and motor vehicle emissions. The goals, policies, and implementation measures included in Roseville's Air Quality Element represent an important step that, in coordination with PCAPCD efforts, will contribute to a cleaner, healthier environment for the citizens of Roseville.

Climate Change

Similar to Roseville and Placer County, over 40% of the greenhouse gas emissions in the state are from transportation sources.² Also similar to the problem of surface level ozone, no single control or strategy will solve the issue of Climate Change. ~~Recent~~ California legislation, Governor's Executive Order S-3-05 and Assembly Bill 32, are continuing to influence, on a statewide basis, land development and energy use. At the local level, the goals, policies and implementation measures in Roseville's General Plan constitute an incremental step, in coordination with efforts

² *The Role of Land Use in Meeting California's Energy and Climate Change Goals*. California Energy Commission June 2007.

on a larger scale, from state to international efforts, which will contribute to counteracting the effects of Climate Change, and reduce greenhouse gas emissions.

City of Roseville General Plan Policies for Sustainability

Land Use Element

The ~~land~~Land Use ~~E~~element contains policies that promote land use patterns intended to make efficient use of land, preserve open space, and provide adequate services. These policies support sustainability.

Circulation Element

The Circulation Element includes policies to reduce congestion, and encourage bicycle and pedestrian travel. These measures help ensure that green house gas emissions from vehicle sources are reduced or minimized.

Open Space and Conservation Element

The ~~open~~Open space~~Space~~ and ~~conservation~~Conservation ~~e~~Element contains policies that promote sustainability by supporting open space acquisition; and emphasizing an interconnected open space system with bicyclist and pedestrian connections between residential development and schools, employment, and commercial areas.

Parks and Recreation

The ~~parks~~Parks and ~~recreation~~Recreation ~~element~~Element takes into consideration energy

efficiency and water conservation, including the use of treated wastewater, in park development, and design which helps ensure that the parks are sustainable.

Public Facilities Element

The ~~public~~Public facilities~~Facilities~~ ~~element~~Element includes policies that support sustainability by addressing energy-efficiency and renewable energy, water conservation, maximizing the use of recycled water, and solid waste source reduction and recycling.

Safety Element

The ~~safety~~Safety ~~element~~Element includes policies intended to minimize the potential for loss of life and property due to flooding, which has been identified as a potential impact of climate change.

Housing Element

The ~~housing~~Housing ~~element~~Element includes policies to apply energy efficiency requirements to all residential construction, and encourage development of mixed use projects in accordance with the goals and policies contained in the Land Use Element. These policies support sustainable development.

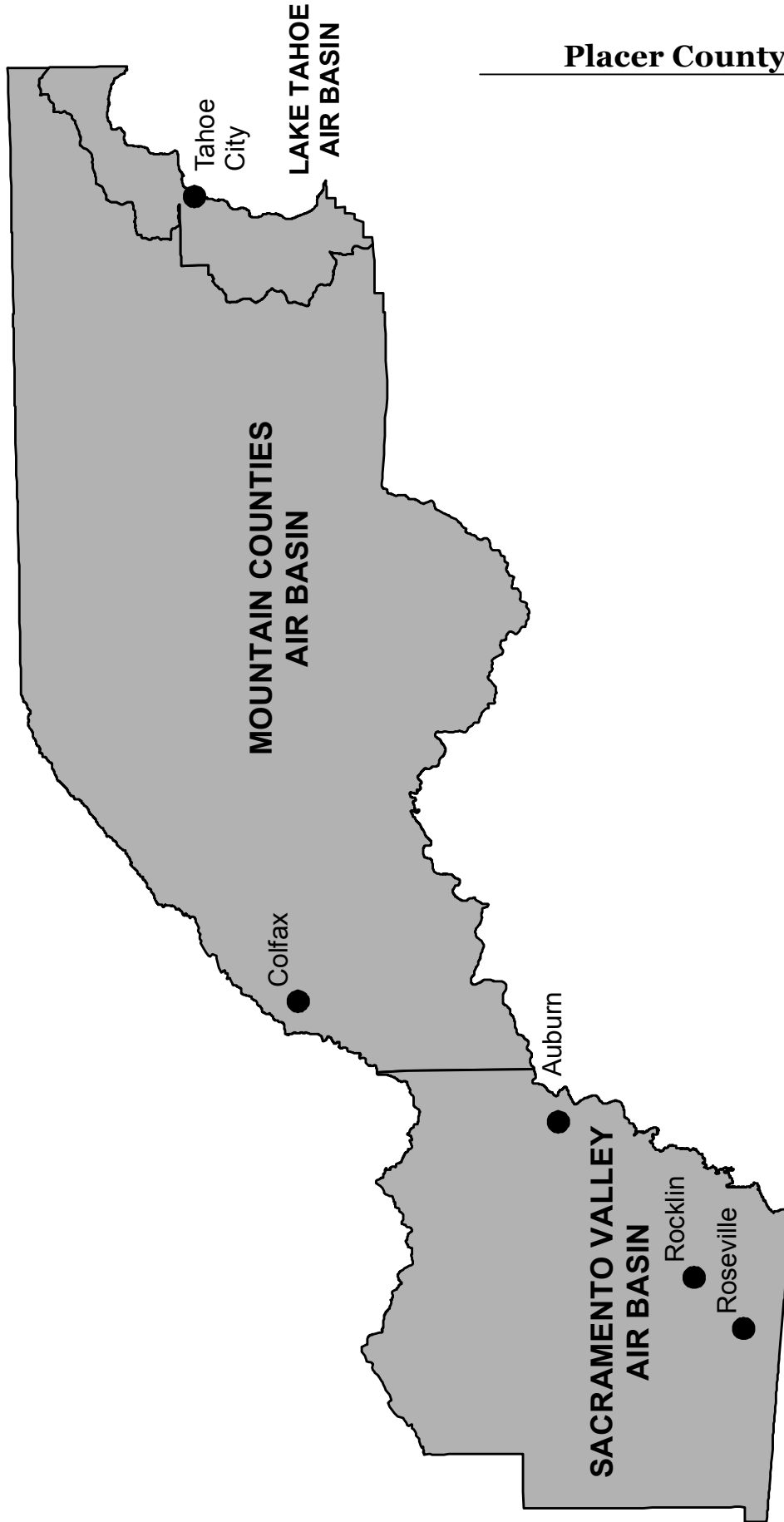
**TABLE IV-1
CRITERIA POLLUTANT ATTAINMENT STATUS
FOR THE CITY OF ROSEVILLE**

Pollutant	Ambient Standards	
	California	Federal
Ozone	Non-attainment/ Serious	Serious -Non-attainment
Carbon monoxide	Unclassified Attainment	Unclassified /Attainment*
Nitrogen Dioxide	Attainment	Unclassified/ Attainment
Sulfur Dioxide	Attainment	Attainment
PM ₁₀	Non-attainment	Unclassifiable /Attainment

* The Sacramento Valley Air Basin portion of Placer County, which includes Roseville (as shown on Figure IV-1), is designated as an attainment area for Carbon monoxide (CO). The Mountain Counties Air Basin remains unclassified.

Note: Unclassified designations indicate that sufficient monitoring data are unavailable. Unclassified areas are generally treated as attainment areas.

Source: Placer County Air Pollution Control District, 201509.



**Fig. IV-1
Placer County Air Basin**

**Figure IV-2
Sources of Placer County
Ozone Precursor Reactive Organic Gasses (ROG)**

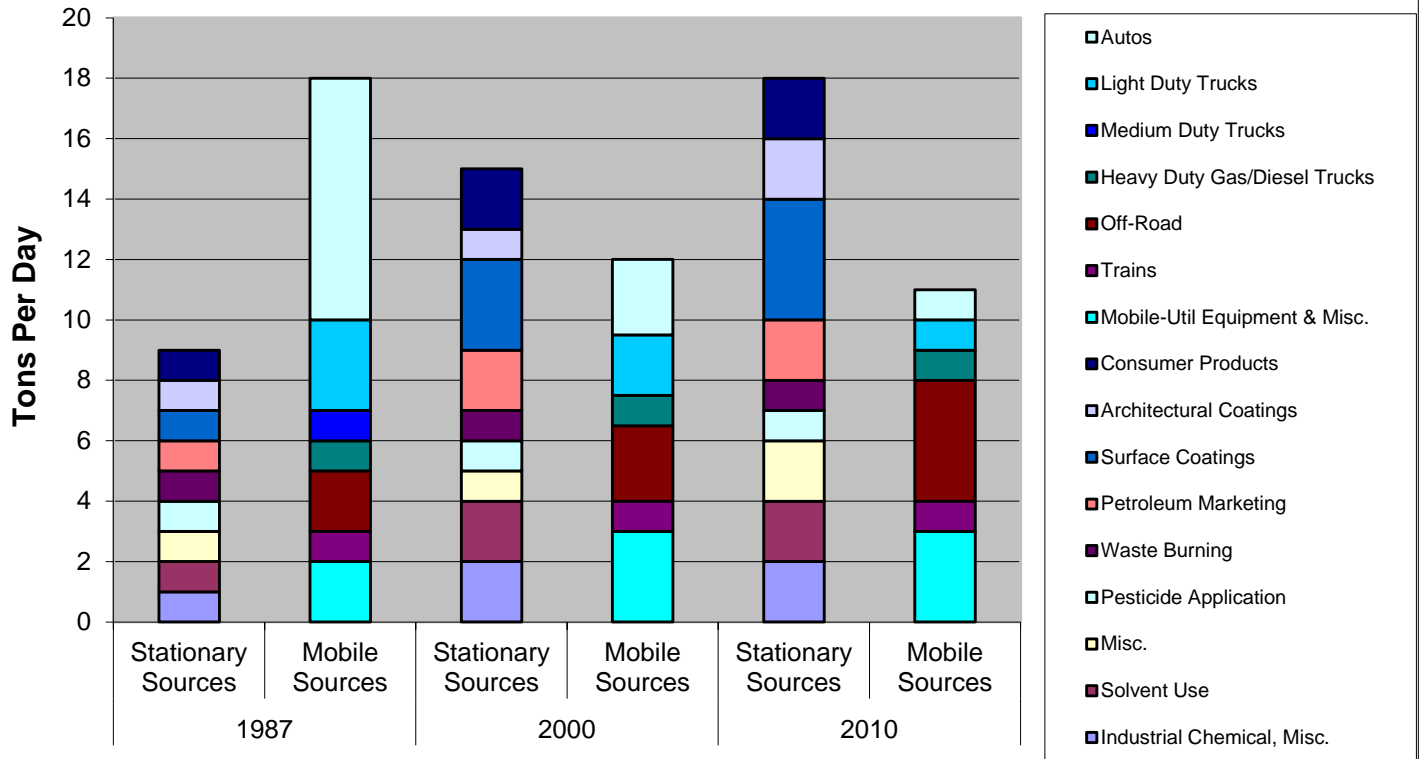
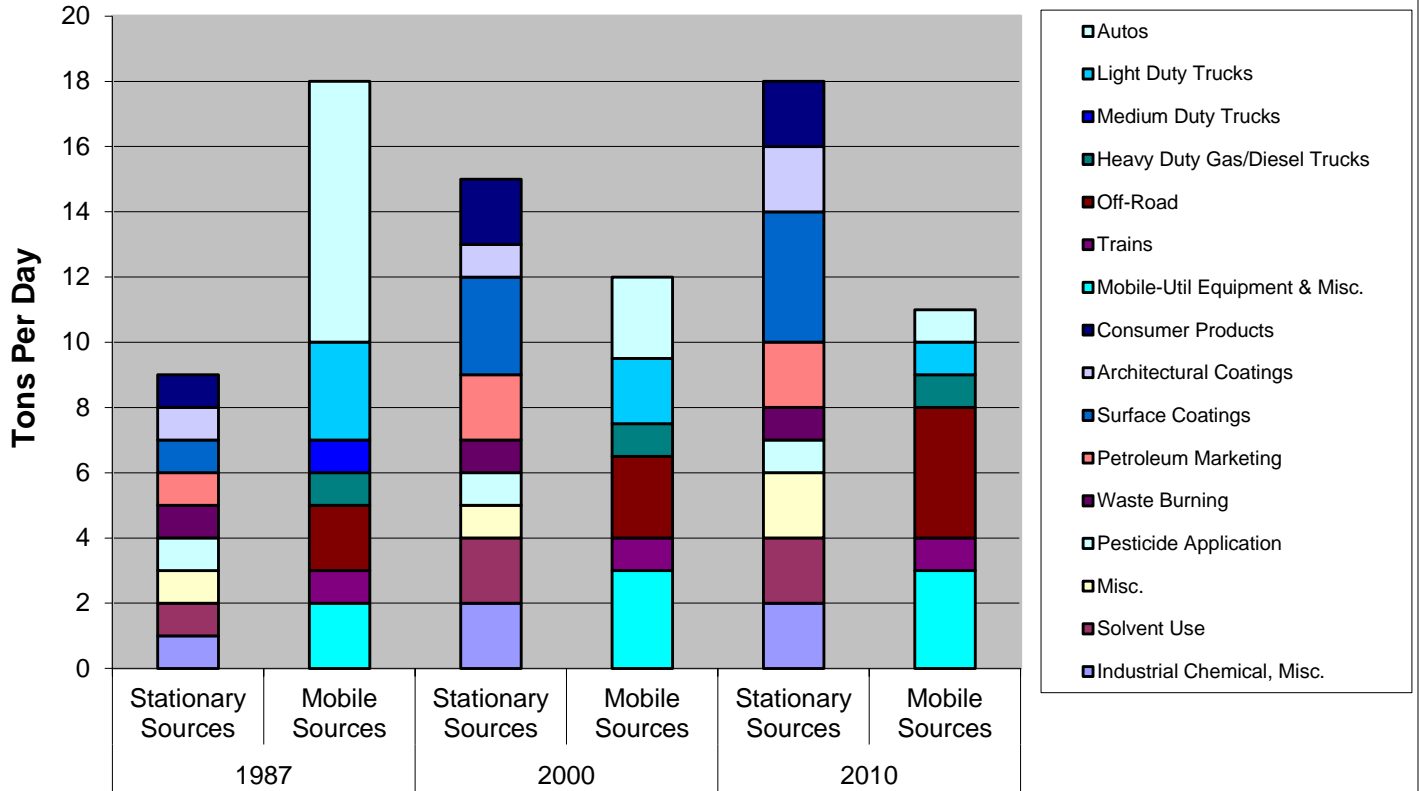


Figure IV-3
Sources of Ozone Precursor Oxides of Nitrogen (NOx)





C. GOALS AND POLICIES

GOALS: AIR QUALITY

- Goal 1** Improve Roseville's air quality by:
- a) Achieving and maintaining ambient air quality standards established by the U.S. Environmental Protection Agency and the California Air Resources Board; and,
 - b) Minimizing public exposure to toxic or hazardous air pollutants and air pollutants that create a public nuisance through irritation to the senses (such as unpleasant odors).
- Goal 2** Integrate air quality planning with the land use and transportation planning process.
- Goal 3** Encourage the coordination and integration of all forms of public transport while reducing motor vehicle emissions through a decrease in the average daily trips and vehicle miles traveled and by increasing the commute vehicle occupancy rate by 50% to 1.5 or more persons per vehicle.
- Goal 4** Increase the capacity of the transportation system, including the roadway system and alternate modes of transportation.
- Goal 5** Provide adequate pedestrian and bikeway facilities for present and future transportation needs.
- Goal 6** Promote a well-designed and efficient light rail and transit system.
- Goal 7** While recognizing that the automobile is the primary form of transportation, the City of Roseville should make a commitment to shift from the automobile to other modes of transportation.
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Policies:	Air Quality - General	Implementation Measures
1.	Cooperate with other agencies to develop a consistent and effective approach to air pollution planning	<ul style="list-style-type: none"> - Interagency Coordination - Development Review Process - Transportation System Management (TSM) Ordinance
2.	Work with the Placer County Air Pollution Control District to monitor air pollutants of concern on a continuous basis.	<ul style="list-style-type: none"> - Interagency Coordination - Air Quality Funding
3.	Develop consistent and accurate procedures for evaluating the air quality impacts of new projects.	<ul style="list-style-type: none"> - Interagency Coordination - Development Review Process
4.	As part of the development review process, develop mitigation measures to minimize stationary and area source emissions.	<ul style="list-style-type: none"> - Mitigation Strategies: Area and Stationary Sources

Policies:	Air Quality - Transportation - and Circulation – Related	Implementation Measures
5.	Develop transportation systems that minimize vehicle delay and air pollution.	<ul style="list-style-type: none"> - Mitigation Strategies: Motor Vehicles
6.	Develop consistent and accurate procedures for mitigating transportation emissions from new and existing projects.	<ul style="list-style-type: none"> - TSM Ordinance - Air Quality Funding - Mitigation Strategies: Motor Vehicles
7.	Encourage alternative modes of transportation including pedestrian, bicycle, and transit usage.	<ul style="list-style-type: none"> - Mitigation Strategies: Motor Vehicle Alternatives

Policies:	Air Quality - Land Use-Related	Implementation Measures
8.	Separate air pollution-sensitive land uses from sources of air pollution.	- <i>Mitigation Strategies: Land Use</i>
9. 	Encourage land use policies that maintain and improve air quality.	- <i>Interagency Coordination</i> - <i>Mitigation Strategies: Land Use</i>
Policies:	Air Quality – Energy Conservation Related	Implementation Measures
 10.	Conserve energy and reduce air emissions by encouraging energy efficient building designs and transportation systems.	- <i>Development Review Process</i> - <i>Mitigation Strategies: Area and Stationary Sources</i> - <i>Mitigation Strategies: Motor Vehicles</i> - <i>Mitigation Strategies: Motor Vehicle Alternatives</i> - <i>Mitigation Strategies: Land Use</i>
Policies:	Air Quality - Hazardous Materials-Related	Implementation Measures
11.	Protect City residents from the risks involved in the transport, distribution, storage, use, and disposal of hazardous materials.	- <i>Interagency Coordination</i> - <i>Development Review Process</i> - <i>Hazardous Materials Regulation</i>

D. IMPLEMENTATION MEASURES

1. Interagency Coordination (Ongoing)

Coordinate with other local and regional jurisdictions, including the PCAPCD and the California Air Resources Board (ARB), in the development of regional and county clean air plans and incorporate the relevant provisions of those plans into City planning and project review procedures. Also cooperate with the PCAPCD and ARB in:

- Enforcing the provisions of the California and Federal Clean Air Acts, state and regional policies, and established standards for air quality.
- Establishing a monitoring station to accurately determine the status of carbon monoxide, ozone, nitrogen dioxide, and hydrocarbon concentrations.
- Developing and implementing clean fuel regulations for vehicle fleets.
- Developing consistent procedures for evaluating project-specific and cumulative air quality impacts of projects.

Submit development proposals to the PCAPCD for review and comment in compliance with CEQA prior to consideration by the appropriate decision-making body.

Cooperate with Placer County in the identification of hazardous material users (both large and small-scale users) and the development of an inspection process and hazardous materials management plan. (Policies 1, 2, 3, 9 and 11)

2. Development Review Process (Ongoing)

Notify and solicit comments from local and regional agencies of proposed projects that may affect regional air quality. The comments of the responding agencies will be considered during the review of the projects. The City will encourage project applicants to consult early in the planning process with Planning **Department** **Division** staff regarding the applicability of county-wide indirect and area wide source permit program and TCM programs. Project review

should also address energy efficient building and site designs, as well as the proper storage, use, and disposal of hazardous materials.

Include identification of potential air quality impact and designation of design and other appropriate mitigation measures or offset fees to reduce impacts in the environmental review of a project. The City will dedicate staff to work with project proponents and other agencies in identifying, ensuring the implementation of, and monitoring the success of mitigation measures. (Policies 1, 3, 10 and 11)

3. Transportation Systems Management Ordinance (Existing)

Continue to refine, improve, and enforce the Roseville TSM ordinance and coordinate the existing TSM program with programs developed by other agencies, including the Sacramento Area Council of Governments and the PCAPCD. (Policies 1 and 6)

4. Air Quality Funding (Proposed Ongoing)

Explore alternative financing mechanisms for local air quality improvement programs, such as the establishment of a mitigation fee, bonds, or assessment districts, and examine whether grants are available to establish an air quality monitoring program. In addition, develop a methodology providing project proponent funding of roadway improvements that equitably shares the costs of those improvements. Similar mechanisms should be explored for other types of transportation improvements. (Policies 2 and 6)

5. Mitigation Strategies - Area and Stationary Sources (Proposed Ongoing)

Require area and stationary source projects that generate significant amounts of air pollutants to incorporate air quality mitigation in their design, including:

- The use of best available control technology for stationary industrial sources;
- The use of EPA-certified wood stoves in new residential units;

- The use of new and replacement fuel storage tanks at refueling stations that are clean fuel compatible, if technically and economically feasible;
- The promotion of energy efficient designs, including provisions for solar access, building siting to maximize natural heating and cooling, and landscaping to aid passive cooling and to protect from winter winds (see also Water and Energy Conservation Component of the Public Facilities Element). *(Policies 4 and 10)*

6. Mitigation Strategies - Motor Vehicles

(Proposed Ongoing)

Develop mitigation strategies to reduce air emissions from motor vehicles. These strategies, which may consist of improvements and refinements to the transportation and circulation infrastructure, may include:

- Maintaining acceptable levels of service as specified in the Circulation Element;
- Minimizing the number of intersections along major arterials;
- Requiring traffic counter loops and traffic management hardware at major garage entrances, driveways, new intersections, and other appropriate locations;
- Synchronizing traffic signals on arterial streets to the extent possible to facilitate the flow of traffic and minimize stops or delays;
- Considering high occupancy vehicle lanes in street and highway widening and new construction projects for arterials and wider rights-of-way;
- Filling gaps or missing links in infrastructure systems (i.e., bike/pedestrian trails, bridge crossings, railroad crossings, street extensions) prior to the construction and occupancy of residential developments utilizing that infrastructure.

Develop strategies to minimize the number and length of vehicle trips, which may include:

- Promoting commercial/industrial project proponent sponsorship of van pools or club buses;

- Encouraging commercial/industrial project day care and employee services at the employment site;
- Encouraging the provision of transit, especially for employment-intensive uses of 200 or more employees;
- Providing subscription bus service to major trip generators or events;
- Discouraging single-occupant vehicle trips through parking supply and pricing controls or other measures identified by the PCAPCD;
- Providing incentives for the use of transportation alternatives;
- Providing expansion and improvement of public transportation services and facilities;
- Encouraging public transit use and the formation of car pools in new areas by requiring bus turnouts, bus shelters, and/or park-and-ride lots;
- Locating public facilities in areas easily served by public transportation;
- Requiring that large developments (e.g., specific plans, large commercial or residential uses) dedicate land for use as park-and-ride lots if suitably located, or requiring large developments to provide park-and-ride spaces if located adjacent to regional transit facilities. *(Policies 5, 6 and 10)*

7. Mitigation Strategies - Motor Vehicle Alternatives

(Proposed Ongoing)

Encourage transportation alternatives to motor vehicles by developing infrastructure amenable to such alternatives by doing the following:

- Implement the Bicycle Master Plan and Long-Range Transit Plan as specified in the Circulation Element;
- Consider right-of-way requirements for bike usage in the planning of new arterial and collector streets and in street improvement projects;
- Require that new development be designed to promote pedestrian and bicycle access and circulation;

- Provide safe and secure bicycle parking facilities at major activity centers, such as public facilities, employment sites, and shopping and office centers;
- Provide convenient and safe pedestrian and bike movement through the large parking areas that surround large retail and office centers;
- Provide safe pathways that link residential areas to schools, parks, services, and employment areas and transit facilities;
- Promote project design that encourages pedestrian and cyclist use, including grade separated crossing at major arterials, clear and safe connections between projects and uses;
- Install sidewalks in residential and commercial developments with protective curbing and adequate lighting and pedestrian amenities. (*Policies 7 and 10*)
- Provide for mixed-use development through land use and zoning to reduce the length and frequency of vehicle trips;
- Consider increased intensity of development along existing and proposed transit corridors (see the Long-Range Transit Plan described in the Circulation Element);
- Accommodate a portion of the projected population and economic growth of the City in areas having the potential for redevelopment or revitalization;
- Locate public facilities (libraries, parks, schools, community centers, etc.) with consideration of transit and other transportation opportunities;
- Preserve rights-of-way and station sites along future light rail extensions;
- Encourage small neighborhood-serving commercial uses within or adjacent to resident neighborhoods when such areas are aesthetically compatible with adjacent areas; do not create conflicts with neighborhoods schools, minimize traffic, noise, and lighting impacts; encourage and accommodate pedestrian and bicycle access; and, are occupied by commercial uses that have a neighborhood-scale market area rather than a community-wide market area;

8. Mitigation Strategies - Land Use (Ongoing)

Encourage ~~land use~~ development to be located and designed to conserve air quality and minimize direct and indirect emissions of air contaminants by doing the following:

- Locate air pollution point sources, such as manufacturing and extracting facilities, in areas designated for industrial development and separated from residential areas and sensitive receptors (e.g., homes, schools, and hospitals);
- Establish buffer zones (e.g., setbacks, landscaping) within residential and other sensitive receptor site plans to separate those uses from freeways, arterials, hazardous material locations and other sources of air pollution or odor;
- Consider the jobs/housing relationship (i.e., the proximity of industrial and commercial uses to major residential areas) when making land use decisions;
- Provide for the location of ancillary employee services (including, but not limited to, child care, restaurants, banks, and convenience markets) at major employment centers to reduce midday vehicle trips;

- Encourage a development pattern that is contiguous with existing developed areas of the City. (*Policies 8, 9 and 10*)

9. Hazardous Materials Regulations (Existing)

Regulate the use, storage and disposal of hazardous materials consistent with the provisions of state and federal regulations and the policies of the Safety Element. Emphasis will be given to minimizing public exposure to hazardous materials by requiring proper storage and disposal of such materials to prevent leakage, explosions, fires or the escape of harmful gases. The City will maintain compatibility between hazardous materials users and surrounding land uses to insure public safety. (*Policy 11*)