

IV. AIR QUALITY AND CLIMATE CHANGE





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AIR QUALITY AND CLIMATE CHANGE

PURPOSE

To protect the well-being of its citizens, the City of Roseville recognizes the importance of establishing goals and implementing policies to improve air quality and address climate change. The Air Quality and Climate Change Element's goals and policies are intended to improve air quality, address climate change, and encourage cooperation between jurisdictions involved in regional air quality improvement efforts. This intent to improve air quality and address climate change is also the focus of other General Plan Elements, including:

- **Land Use Element:** contains policies that promote development patterns intended to make efficient use of land.
- **Circulation Element:** includes policies to reduce auto dependence and encourage bicycle and pedestrian travel. These measures help ensure that greenhouse gas emissions from vehicle sources are reduced or minimized.
- **Open Space and Conservation Element:** contains policies that promote sustainability by supporting open space acquisition and emphasizing an interconnected open space system with bicycle and

pedestrian connections between residential development and schools, employment, commercial areas, and other destinations.

- **Parks and Recreation:** takes into consideration energy efficiency and water conservation, including the use of treated wastewater, in park development, and design that helps ensure that the parks are sustainable.
- **Public Facilities Element:** includes policies that address energy efficiency and renewable energy, water conservation, maximization of recycled water usage, and solid waste source reduction and recycling.
- **Safety 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:** includes policies to apply energy efficiency requirements and encourage development of mixed-use projects in accordance with the goals and policies contained in the Land Use Element.

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

SETTING

Local and regional air pollutant emissions combine with topographic and meteorological conditions to cause concentrations of air pollutant emissions that lead to adverse public and environmental health impacts. While regulations have reduced health risk for some pollutants, such as lead, for many years, areas surrounding Roseville have exceeded air quality standards for ozone and particulate matter. In addition to planning in a way that reduces vehicular travel and other major sources of some of the most common air pollutants (e.g. carbon monoxide, lead, particulate matter), otherwise known as criteria air pollutants, it is also important to reduce risk related to exposure to toxic air contaminants from the Rail Yard, railroad operations, high-volume roadways, and other sources.

While the sources and effects of most air pollutants are local or regional, the sources and effects of greenhouse gas emissions concentrations are global; the economic, environmental, and social effects of climate change are extensive and potentially catastrophic. However, strategies intended to reduce greenhouse gas emissions can also reduce household and business transportation costs, decrease harmful air pollution, enhance mobility, reduce commuting time, and provide other benefits. Compact development, which reduces greenhouse gas emissions, can also be more cost-effective to provide public infrastructure and services. Measures that promote energy efficiency reduce greenhouse gas emissions but also save on household and business utility costs. Encouraging reinvestment in existing, developed areas can reduce vehicular travel and associated greenhouse gas emissions, but also promote the City's economic development and fiscal sustainability objectives.

ORGANIZATION

The contents of the Air Quality and Climate Change Element are divided into the following components:

- **Air Quality – General** expresses the City's overall policies related to regional coordination and development review as it relates to air quality.



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- **Climate Change – General** expresses the City's overall policies related to regional coordination, adaptation, and resiliency, and greenhouse gas reduction.
- **Air Quality and Climate Change – Land Use and Transportation** focuses on policies that reduce reliance on vehicle travel, promote alternative transportation technologies, and reduce the amount of pollutant emissions and greenhouse gases which result from vehicle travel.
- **Air Quality and Climate Change – Energy Conservation** focuses on policies that encourage energy conservation, and efficient building and community design.
- **Air Quality – Hazards** focuses on policies which reduce the potential for residents to be exposed to harmful pollutant sources.

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Air Quality

For many years, areas surrounding Roseville have exceeded air quality standards for ozone and particulate matter. 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 formed through a complex series of chemical reactions known as ozone precursors. The primary ozone precursors of concern are reactive organic gases (ROG) and nitrogen oxides (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. Particulate matter (PM₁₀) can aggravate existing heart and lung diseases, change the body's defenses against inhaled materials, and damage lung tissue. The primary sources of PM₁₀ are road dust and construction/demolition activities.

Vehicle exhaust is the primary source of NO_x and ROG in the region. The City's and the region's population are expected to increase substantially through 2035, which will lead to more vehicles on the road. However, improved automobile emission standards and increased alternatives to fuel such as electric vehicles have reduced the amount of pollutants in vehicle exhaust. According to the PCAPCD's 2015 Triennial Progress Report, between 1990 and 2015, the overall ROG emissions declined about 47 percent, and NO_x emissions decreased about 43 percent, and from 2015 to 2025, overall Placer County ROG emissions are expected to continue decreasing by approximately 6 percent with NO_x emissions decreasing by approximately 30 percent.

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. No single control or strategy will solve the problem. While regulatory standards are a part of the solution, the goals, policies, and implementation measures included in Roseville's General Plan also contribute toward a cleaner, healthier environment for the citizens of Roseville.

Climate Change

Certain gases in the Earth's atmosphere, classified as greenhouse gas emissions, play a critical role in determining surface temperatures. Solar radiation enters the earth's atmosphere, and a portion of the radiation is absorbed by the earth's surface, while a smaller portion is reflected back toward space. Greenhouse gas emissions in the atmosphere absorb some of this reflected energy, resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for

maintaining a habitable climate on Earth. However, human activities—combustion of fossil fuels, industrial processes, agricultural process, and others—are increasing the concentration of greenhouse gases in the atmosphere. This is contributing to an observed increase in the average surface temperature of the earth. Global warming refers to this temperature increase, while climate change refers to the observed and predicted alterations in patterns of rainfall, seasonal temperature, and other variables caused by global warming.

Unlike criteria air pollutants, which are pollutants of regional and local concern, climate change is a global issue. Whereas pollutants with localized effects have short atmospheric lifetimes (about one day), greenhouse gases have much longer atmospheric lifetimes (one year to several thousand years), which allow their dispersal around the globe. Climate change has immediate and long-term repercussions for the economy, environment, and public health. Health risks associated with climate change include increased temperatures, which is especially problematic for children, the elderly, and people with existing health conditions, as they are more prone to risk of heat stroke and heat-related complications. In addition, energy delivery is vulnerable to extreme heat events, since high temperatures can cause mechanical failure of grid equipment, heat damage to electricity lines, and challenges related to high demand for electricity to power air conditioners.

The California Air Resources Board *Climate Change Scoping Plan* examines the primary greenhouse gas emissions sources in California, and the state's progress toward emissions reduction. Carbon dioxide is the primary GHG emitted in California, accounting for 84 percent of total GHG emissions (as of 2015).¹ Combustion of fossil fuels in the transportation sector is the single largest source of California's greenhouse gas emissions, followed by industry, and then electricity. While greenhouse gas emissions remain a concern, the state has made progress, achieving a 10 percent reduction in emissions since 2004. Vehicle emissions standards, an increasing portfolio of renewable energy sources, and other factors have contributed to these reductions in emissions.

At the local level, the goals, policies, and implementation measures in Roseville's General Plan constitute an incremental step. When they are implemented in coordination with efforts on a larger scale, from state to international efforts, they will contribute to counteracting the effects of climate change and reduce greenhouse gas emissions.

¹ For more detail, please refer to the California Air Resources Board website: <https://ww3.arb.ca.gov/cc/scopingplan/scopingplan.htm>.



Strategies to reduce vehicular transportation and encourage pedestrian, bicycle, and transit access are particularly important, since transportation is the top source of ozone precursors and greenhouse gas emissions.

GOALS AND POLICIES

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- Goal AQ1.1** **Reduce local air pollutant emissions to assist with meeting and maintaining ambient air quality standards and minimizing public exposure to toxic or hazardous air pollutants and unpleasant odors.**
- Goal AQ1.2** **Integrate air quality planning with the land use and transportation planning process.**
- Goal AQ1.3** **Coordinate all forms of public transport to decrease vehicle miles traveled, while encouraging an increase in the commute vehicle occupancy rate.**
- Goal AQ.4** **Increase the capacity of the pedestrian, bicycle, and public transportation systems and promote vehicular transportation that uses less-polluting fuels, such as electricity.**
- Goal AQ1.5** **Provide adequate pedestrian and bicycle facilities for present and future transportation needs.**
- Goal AQ1.6** **Promote a well-designed and efficient transit system.**

- Goal AQ1.7** **Improve transit, bicycle, and pedestrian access to lessen dependence on automobile travel and reduce household transportation costs.**
- Goal AQ1.8** **Reduce City greenhouse gas emissions, consistent with local, regional, and state goals.**
- Goal AQ1.9** **Enhance Roseville’s resilience to local impacts of climate change.**

AIR QUALITY – GENERAL

- Policy AQ1.1** *Cooperate with other agencies to develop a consistent and an effective approach to reducing air pollution.*
- Policy AQ1.2** *Work with the Placer County Air Pollution Control District to monitor air pollutants of concern on a continuous basis, and support Air District efforts to minimize emissions from stationary sources.*
- Policy AQ1.3** *Projects that could generate or expose sensitive uses to substantial air pollutant concentrations should incorporate strategies to reduce exposure to such emissions using measures recommended by the Placer County Air Pollution Control District and other applicable, feasible strategies, as needed, to avoid significant air quality impacts.*
- Policy AQ1.4** *As part of the development review process, develop mitigation measures to minimize stationary and area source emissions.*
- Policy AQ1.5** *Coordinate with local and regional non-profits and other agencies to substantially increase Roseville’s tree canopy, which serves as a natural air pollutant filtration system that can counter the urban heat island effect. Focus on neighborhoods without a tree canopy and areas prioritized for natural habitat restoration.*

CLIMATE CHANGE – GENERAL

- Policy AQ1.6** *Require new development and City projects to reduce greenhouse gas emissions sources in the Planning Area consistent with the State’s legislative framework, to the greatest degree feasible.*
- Policy AQ1.7** *The City will participate in and support regional greenhouse gas reduction and adaptation programs that are consistent with the General Plan and have available funding.*
- Policy AQ1.8** *Use the Multi-Hazard Mitigation Plan and regional collaborations to guide implementation of adaptation and resilience strategies associated with the anticipated local impacts of climate change.*
- Policy AQ1.9** *Preserve and enhance carbon sequestration resources in the City to improve air quality and reduce net greenhouse gas emissions.*
- Policy AQ1.10** *Improve overall health and sustainability of the community by reducing emissions of greenhouse gases that contribute to climate change.*
- Policy AQ1.11** *Promote local purchase and use of electric vehicles through incentives and strategic expansion of charging infrastructure.*



AIR QUALITY AND CLIMATE CHANGE – LAND USE AND TRANSPORTATION

- Policy AQ1.12** *Develop transportation systems that reduce vehicle emissions by improving the desirability of walking, bicycling, and public transportation relative to vehicular travel.*
- Policy AQ1.13** *Identify feasible strategies to reduce transportation emissions from new projects and existing development within the Planning Area.*
- Policy AQ1.14** *Encourage alternative modes of transportation, including pedestrian, bicycle, and transit use.*
- Policy AQ1.15** *Promote and incentivize low-emissions vehicles and associated charging infrastructure, and pursue funding from state programs and other sources to facilitate local purchase and use of electric vehicles.*
- Policy AQ1.16** *Implement land use policies that maintain and improve air quality and expand opportunities for transit-oriented development, which allows residents to significantly reduce vehicular transportation and associated air pollutant emissions.*

AIR QUALITY AND CLIMATE CHANGE – ENERGY CONSERVATION

- Policy AQ1.17** *Conserve energy and reduce air pollutant emissions by encouraging energy efficient building designs and transportation systems and promoting energy efficiency retrofits of existing structures.*
- Policy AQ1.18** *Promote building and transportation energy efficiency in new residential and commercial development by encouraging and incentivizing implementation measures early in the design and development process.*
- Policy AQ1.19** *Encourage energy efficiency by identifying potential cost savings, resource, and health benefits.*

AIR QUALITY – HAZARDS

- Policy AQ1.20** *Separate air pollution-sensitive land uses from sources of harmful air pollution.*
- Policy AQ1.21** *Protect City residents from the risks involved in the transport, distribution, storage, use, and disposal of hazardous materials, and coordinate with other agencies and organizations to reduce existing sources of health risk.*
- Policy AQ1.22** *Support improvements to diesel engines, limits on idling, and incorporation of technology and management practices that reduce harmful emissions at the Rail Yard.*

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