

4.5 AIR QUALITY

This section evaluates short- and long-term air quality impacts associated with buildout of the Nevada County Housing Element Rezone Implementation Program. Mitigation measures are also recommended to avoid or lessen the project's impacts. Information in this section is based on methodologies and assumptions recommended by the Northern Sierra Air Quality Management District (NSAQMD). Air quality modeling data is included in Appendix D (Air Quality Data).

4.5.1 ENVIRONMENTAL SETTING

CLIMATE

Nevada County (County) is located in the Mountain Counties Air Basin (Basin), which lies in the northeastern region of the State of California. The Basin is bounded to the east by the Sierra Nevada Mountain Range, to the west by the Coastal Mountain Range and to the south by the Tehachapi Mountains. The project area is located on the western slope of the Sierra Nevada Mountains in hilly, forested terrain.

Nevada County exhibits a large variation in terrain and consequently experiences variations in climate, both of which affect air quality. The eastern portions of the County include steeper slopes of the Sierra Nevada Range and relatively shallow river canyons. The warmest areas within the County are found at the lower elevations along the west side of the County, while the coldest average temperatures are found at the highest elevations.

WIND

The prevailing wind direction over the County is westerly. However, the terrain of the area has a great influence on local winds, which results in a wide variability in wind direction. Afternoon winds are generally channeled up-canyon, while nighttime winds generally flow down-canyon. Winds are, in general, stronger in spring and summer and lower in fall and winter. Periods of calm winds and clear skies in fall and winter often result in strong, ground-based inversions forming in mountain valleys. These layers of very stable air restrict the dispersal of pollutants, trapping these pollutants near the ground, representing the worst conditions for local air pollution.

MONITORED AIR QUALITY LEVELS

The California Air Resources Board (CARB) and NSAQMD monitor the local ambient air quality in and around the project area. CARB monitors ambient air quality at approximately 250 air monitoring stations across the state. Air quality monitoring stations typically measure pollutant concentrations ten feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations.

The Grass Valley-Litton Building is the nearest air monitoring station to the project area. The data collected at this station is considered to be representative of the air quality experienced in the project vicinity. Air quality data from 2009 to 2011 for the Grass Valley-Litton Building Monitoring Station is provided in Table 4.5-1, *Local Air Quality Levels*. Monitoring data for particulate matter 10 microns in diameter or less (PM₁₀) was taken from the San Andreas-Gold Strike Road monitoring station, which is the closest monitoring station that collects data for PM₁₀. The following air quality information briefly describes the

various types of pollutants monitored at local stations. It should be noted that Table 4.5-1 does not include data for carbon monoxide (CO) and sulfur dioxide (SO₂), as monitoring data for these pollutants are not available in the Basin.

**Table 4.5-1
 Local Air Quality Levels**

Pollutant	California Standard	Federal Primary Standard	Year	Maximum Concentration ³	Days (Samples) State/Federal Std. Exceeded
Ozone (O ₃) 1 hour ¹	0.09 ppm (1 hour)	0.12 ppm (1 hour)	2009	0.103 ppm	3/0
			2010	0.093	0/0
			2011	0.094	0/0
Ozone (O ₃) 8 hour ¹	0.07 ppm (8 hour)	0.08 ppm (8 hour)	2009	0.091 ppm	38/17
			2010	0.088	18/6
			2011	0.082	20/6
Nitrogen Dioxide (NO ₂) ¹	0.18 ppm (1 hour)	0.100 ppm (1 hour)	2009	0.026 ppm	0/NM
			2010	0.033	0/NM
			2011	0.028	0/NM
Particulate Matter (PM ₁₀) ^{2, 3, 4}	50 : g/m ³ for 24 hours	150 : g/m ³ for 24 hours	2009	26.0 µg/m ³	0/0
			2010	26.3	0/0
			2011	32.2	0/0
Fine Particulate Matter (PM _{2.5}) ^{1, 3, 4}	12 mg/m ³ (annual arithmetic mean)	35 mg/m ³ (24 hours)	2009	36.0 µg/m ³	NM/0
			2010	19.7	NM/0
			2011	21.0	NMA/0

ppm = parts per million; NM = not measured; µg/m³ = micrograms per cubic meter; PM_{2.5} = particulate matter 2.5 microns in diameter or less; NA = not applicable.

1. The nearest monitoring station is located at 200 Litton Drive, Suite 230, Grass Valley California 95945. Data for O₃, PM_{2.5}, and NO₂ were obtained from this monitoring station. Data for CO and SO₂ are not available in the Mountain Counties Air Basin.
2. Measurements were taken at the San Andreas-Gold Strike Road Monitoring Station (located at 501 Gold Strike Road, San Andreas, California 95249).
3. Maximum concentration is measured over the same period as the California standards.
4. PM₁₀ and PM_{2.5} exceedances are derived from the number of samples exceeded, not days.

Source: Aerometric Data Analysis and Measurement System (ADAM), summaries from 2009 to 2011, <http://www.arb.ca.gov/adam>.

Ozone (O₃)

Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. The troposphere extends approximately ten miles above ground level, where it meets the second layer, the stratosphere. The stratospheric (the "good" ozone) layer extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays (UV-B).

“Bad” ozone is a photochemical pollutant, and needs VOCs, NO_x, and sunlight to form; therefore, VOCs and NO_x are ozone precursors. VOCs and NO_x are emitted from various sources throughout the area. To reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors. Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and several hours in a stable atmosphere with strong sunlight. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

While ozone in the stratosphere protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone can adversely affect the human respiratory system and other tissues. Many respiratory ailments, as well as cardiovascular disease, are aggravated by

exposure to high ozone levels. Ozone also damages natural ecosystems (such as forests and foothill communities) and damages agricultural crops and some man-made materials (such as rubber, paint, and plastics). Societal costs from ozone damage include increased healthcare costs, the loss of human and animal life, accelerated replacement of industrial equipment and reduced crop yields.

Carbon Monoxide (CO)

Carbon monoxide (CO) is an odorless, colorless toxic gas that is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. At high concentrations, CO can reduce the oxygen-carrying capacity of the blood and cause headaches, dizziness, unconsciousness and death.

Nitrogen Dioxide (NO_x)

Nitrogen oxides (NO_x) are a family of highly reactive gases that are a primary precursor to the formation of ground-level ozone, and react in the atmosphere to form acid rain. Nitrogen dioxide (NO₂), often used interchangeably with NO_x, is a reddish-brown gas that can cause breathing difficulties at high levels. Peak readings of NO₂ occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries and other industrial operations).

NO_x can irritate and damage the lungs and lower resistance to respiratory infections such as influenza. The health effects of short-term exposure are still unclear. However, continued or frequent exposure to NO_x concentrations that are much higher than those normally found in the ambient air may increase acute respiratory illnesses in children and increase the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO₂ may aggravate eyes and mucus membranes and cause pulmonary dysfunction.

Coarse Particulate Matter (PM₁₀)

PM₁₀ refers to suspended particulate matter (PM) which is smaller than 10 microns. PM₁₀ arises from sources such as road dust, diesel soot, combustion products, construction operations and dust storms. PM₁₀ scatters light and significantly reduces visibility. In addition, these particulates penetrate the lungs and can potentially damage the respiratory tract.

Fine Particulate Matter (PM_{2.5})

Due to recent increased concerns over health impacts related to fine particulate matter, both federal and state standards have been created for PM_{2.5}. The impacts of fine particulate matter primarily affect infants, children, the elderly and those with pre-existing cardiopulmonary disease.

Sulfur Dioxide

Sulfur dioxide is a colorless, pungent gas belonging to the family of sulfur oxide gases (SO_x), formed primarily by combustion of sulfur-containing fossil fuels (primarily coal and oil), and during metal smelting and other industrial processes. Sulfur dioxide (SO₂) is often used interchangeably with sulfur oxides (SO_x). The major health concerns associated with exposure to high concentrations of SO_x are effects on breathing, respiratory illness, diminishment of pulmonary defenses and aggravation of existing cardiovascular disease.

Major subgroups of the population that are most sensitive to SO_x are individuals with cardiovascular disease or chronic lung disease (such as bronchitis or emphysema), as well as children and the elderly. Emissions of SO_x also can damage the foliage of trees and agricultural crops. Together, SO_x and NO_x are the major precursors to acid rain, which is associated with the acidification of lakes and streams and the accelerated corrosion of buildings and public monuments. Sulfur oxides can react to form sulfates, which significantly reduce visibility.

Reactive Organic Gases (ROGs) and Volatile Organic Compounds (VOCs)

Hydrocarbons are organic gases that are formed solely of hydrogen and carbon. There are several subsets of organic gases including ROGs and VOCs. ROGs comprise all hydrocarbons except those exempted by CARB. Therefore, ROGs are a set of organic gases based on state rules and regulations. VOCs are similar to ROGs in that they comprise all organic gases except those exempted by federal law. VOCs are, therefore, a set of organic gases based on federal rules and regulations. Both ROGs and VOCs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. The major sources of hydrocarbons are combustion engine exhaust, oil refineries and oil-fueled power plants. Other common sources are petroleum fuels, solvents, dry cleaning solutions and paint (via evaporation).

Sensitive Receptors

The NSAQMD identifies a sensitive receptor as a location where human populations (especially children, senior citizens and sick persons) are present. Additionally, a sensitive receptor location occurs where there is a reasonable expectation of continuous human exposure to pollutants, according to the averaging period for ambient air quality standards, such as 24 hours, eight hours or one hour. Examples of sensitive receptors are residences, hospitals and schools; industrial and commercial uses are not considered sensitive receptors.

4.5.2 REGULATORY SETTING

United States Environmental Protection Agency

The principal air quality regulatory mechanism on the federal level is the Clean Air Act (FCAA) and, in particular, the 1990 amendments to the FCAA and the National Ambient Air Quality Standards (NAAQS) that it establishes. These standards identify levels of air quality for “criteria” pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. The criteria pollutants are O₃, CO, NO₂ (a form of NO_x), SO₂ (a form of SO_x), PM₁₀, PM_{2.5}, and lead (Pb); refer to Table 4.5-2, *National and California Ambient Air Quality Standards*. The EPA also has regulatory and enforcement jurisdiction over emission sources beyond state waters (outer continental shelf) and those that are under the exclusive authority of the federal government, such as aircraft, locomotives and interstate trucking.

California Air Resources Board

CARB administers the air quality policy in California. The California Ambient Air Quality Standards (CAAQS) were established in 1969 pursuant to the Mulford-Carrell Act. These standards, included with the NAAQS in Table 4.5-2, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility-reducing particulates, hydrogen sulfide and sulfates.

**Table 4.5-2
National and California Ambient Air Quality Standards**

Pollutant	Averaging Time	California ¹		Federal ²	
		Standard ³	Attainment Status	Standards ⁴	Attainment Status
Ozone (O ₃)	1 Hour	0.09 ppm (180 µg/m ³)	Nonattainment	N/A ⁵	N/A ⁵
	8 Hours	0.07 ppm (137 µg/m ³)	Nonattainment	0.075 ppm (147 µg/m ³)	Nonattainment
Particulate Matter (PM ₁₀)	24 Hours	50 µg/m ³	Nonattainment	150 µg/m ³	Unclassified
	Annual Arithmetic Mean	20 µg/m ³	Nonattainment	N/A ⁶	Unclassified
Fine Particulate Matter (PM _{2.5})	24 Hours	No Separate State Standard		35 µg/m ³	Unclassified/Attainment
	Annual Arithmetic Mean	12 µg/m ³	Unclassified	15 µg/m ³	Unclassified/Attainment
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m ³)	Unclassified	35 ppm (40 mg/m ³)	Unclassified/Attainment
	8 Hours	9.0 ppm (10 mg/m ³)	Unclassified	9 ppm (10 mg/m ³)	Unclassified/Attainment
Nitrogen Dioxide (NO ₂) ⁷	1 Hour	0.18 ppm (339 µg/m ³)	Attainment	100 ppb (188 µg/m ³)	N/A
	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)	N/A	53 ppb (100 µg/m ³)	Unclassified/Attainment
Sulfur Dioxide (SO ₂)	1 Hour	0.25 ppm (655 µg/m ³)	Attainment	75 ppb (196 µg/m ³)	N/A
	3 Hours	N/A	N/A	N/A	Unclassified
	24 Hours	0.04 ppm (105 µg/m ³)	Attainment	0.14 ppm	Unclassified
	Annual Arithmetic Mean	N/A	N/A	0.030 ppm	Unclassified
Lead (Pb)	30 days average	1.5 µg/m ³	Attainment	N/A	N/A
	Calendar Quarter	N/A	N/A	1.5 µg/m ³	N/A
Visibility-Reducing Particles	8 Hours (10 a.m. to 6 p.m., PST)	Extinction coefficient = 0.23 km@<70% RH	Unclassified	No Federal Standards	
Sulfates	24 Hour	25 µg/m ³	Attainment		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	Unclassified		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m ³)	N/A		

µg/m³ = micrograms per cubic meter; ppm = parts per million; ppb = parts per billion; km = kilometer(s); RH = relative humidity; PST = Pacific Standard Time; N/A = Not Applicable

Table 4.5-2, continued

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter-PM₁₀ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations. In 1990, the California Air Resources Board (CARB) identified vinyl chloride as a toxic air contaminant, but determined that there was not sufficient available scientific evidence to support the identification of a threshold exposure level. This action allows the implementation of health-protective control measures at levels below the 0.010 parts per million ambient concentration specified in the 1978 standard.
2. National standards (other than ozone, particulate matter and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. EPA also may designate an area as *attainment/unclassifiable*, if: (1) it has monitored air quality data that show that the area has not violated the ozone standard over a three-year period; or (2) there is not enough information to determine the air quality in the area. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
3. Concentration is expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
5. The Federal 1-hour ozone standard was revoked on June 15, 2005 in all areas except the 14 8-hour ozone nonattainment Early Action Compact (EAC) areas.
6. The Environmental Protection Agency revoked the annual PM₁₀ standard in 2006 (effective December 16, 2006).
7. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010). Note that EPA standards are in units of ppb and California standards are in units of ppm.

Source: California Air Resources Board and U.S. Environmental Protection Agency, June 7, 2012.

State Air Toxics Program

Toxic air contaminants are another group of pollutants of concern in California. There are hundreds of different types of toxic air contaminants, with varying degrees of toxicity. Sources of toxic air contaminants include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle engine exhaust. Public exposure to toxic air contaminants can result from emissions from normal operations, as well as accidental releases of hazardous materials during upset spill conditions. Health effects of toxic air contaminants include cancer, birth defects, neurological damage and death.

California regulates toxic air contaminants through its air toxics program, mandated in Chapter 3.5 (Toxic Air Contaminants) of the Health and Safety Code (Health and Safety Code Section 39660 et seq.) and Part 6 (Air Toxics “Hot Spots” Information and Assessment) (Health and Safety Code Section 44300 et seq.). CARB, working in conjunction with the State Office of Environmental Health Hazard Assessment (OEHHA), identifies toxic air contaminants. Air toxic control measures may then be adopted to reduce ambient concentrations of the identified toxic air contaminant to below a specific threshold, based on its effects on health, or to the lowest concentration achievable through use of best available control technology for toxics. The program is administered by CARB. Air quality control agencies, including the NSAQMD, must incorporate air toxic control measures into their regulatory programs or adopt equally stringent control measures as rules within six months of adoption by CARB.

Northern Sierra Air Quality Management District

Air districts have the primary responsibility to control air pollution from all sources other than those directly emitted from motor vehicles, which are the responsibility of CARB and the EPA. Air districts adopt and enforce rules and regulations to achieve state and federal ambient air quality standards and enforce applicable state and federal law.

The local air quality agency is the NSAQMD. The NSAQMD is comprised of three contiguous, mountainous, rural counties in northeastern California (Nevada, Sierra, and Plumas counties). The NSAQMD is part of the Mountain Counties Air Basin. The NSAQMD adopts and enforces controls on stationary sources of air pollutants through its permit and inspection programs and regulates open burning. Through its permitting powers, the NSAQMD enforces limitations for emission of criteria and toxic air contaminants. Other NSAQMD responsibilities include monitoring air quality, preparation of clean air plans and responding to citizen air quality complaints.

Nevada County General Plan

The Air Quality Element and the Circulation Element of the Nevada County General Plan includes several goals, objectives and policies with respect to air quality, including the following:

Air Quality Element

- Goal 14.1: Attain, maintain, and ensure high air quality.
- Objective 14.1: Establish land use patterns that minimize impacts on air quality.
- Policy 14.1: Cooperate with the Air Quality Management District (currently the NSAQMD), during review of development proposals. As part of the site plan review process, require applicants of all subdivisions, multi-family, commercial and industrial development projects to address cumulative and long-term air quality impacts, and request the District enforce appropriate land use regulations to reduce air pollution.
- Objective 14.2: Implement standards that minimize impacts on and/or restore air quality.
- Policy 14.2: Include the following as part of the Comprehensive Site Development Standards:
- a. Encourage maximized solar access, where feasible, and consistent with the maintenance of scenic values, in new subdivision designs to optimize energy efficiency.
 - b. Require all installations of solid fuel-burning devices comply with the current Federal EPA emission standards.
 - c. Require installation of masonry and zero-clearance fireplaces in new construction to comply with the current EPA Phase particulate emission limits.
- Policy 14.3: Where it is determined necessary to reduce short-term and long-term cumulative impact, the County shall require all new discretionary projects to offset any pollutant increases. Wherever possible, such offsets shall benefit lower-income housing.
- Policy 14.4: Encourage and cooperate with the Northern Sierra Air Quality Management District, or any successor agency, to:

- a. Work with the County, local public utility districts, other public agencies and the private sector to encourage the development and implementation of educational and incentive programs to encourage energy conservation, house weatherization, solar energy use in new and existing buildings and provide air quality monitoring and advisory programs (e.g., daily standard air pollution index data).
- b. Develop a community biomass program in cooperation with the Nevada County Department of Sanitation and existing homeowner associations, and provide incentives for composting, mulching, grinding, cogeneration, feedstocks and chipping in-lieu of outdoor burning.
- c. Adopt control measures to reduce pollutant emissions from open burning.
- d. Develop a program to regulate and control fugitive dust emissions from construction projects.
- e. Identify and establish visibility standards for air quality in the County.

Policy 14.5:

Encourage and cooperate with the Northern Sierra Air Quality Management District, or any successor agency, to develop and implement a long-term monitoring program to quantify air quality in the County. The County shall work with the District to identify areas for monitoring and to develop an implementation program to begin on-site monitoring upon project application where a proposal will result in an increase of more than 25 tons per year of non-attainment pollutants (or precursors). The County will also cooperate with the District in developing a monitoring program for carbon monoxide emissions at key intersections as a basis for consideration of short- to long-term air quality in the preparation of the County Road Improvement Program.

Policy 14.6:

For new construction, the County shall prohibit the installation of non-EPA certified and non-EPA exempt solid fuel burning devices.

Policy 14.7:

The County shall cooperate with all appropriate agencies and other regional transportation agencies that include surrounding counties to develop programs designed to maximize the participation of employers in employer-operated van pool and/or ride sharing for employees, and mass transit service for both employees and customers.

Policy 14.7A:

The County shall, as part of its development review process, ensure that proposed discretionary developments address the requirements of NSAQMD Rule 226.

Policy 14.7B:

The County shall, as part of its Road Improvement Program, consider the benefits to air quality from the paving of unpaved roads.

Objective 14.3: Identify regional impacts and coordinate with other agencies to achieve attainment.

Policy 14.8: Consider adoption of Joint Powers Agreements or similar legal mechanisms with other counties located within Nevada County's regional sphere to comprehensively address regional air quality impacts as a result of development in each County.

Circulation Element

Goal RD-4.1: Reduce dependence on the automobile.

Goal RD-4.2: Increase the availability of alternative modes of transportation.

Goal RD-4.3: Decrease vehicle miles traveled while encouraging increased transit ridership and vehicle occupancy.

Goal RD-4.4: Encourage land use patterns that reduce the need for new roadways and promote the use of alternative transportation modes.

Policy RD-4.3.4: Minimize the need to commute by:

- a. Providing for an adequate amount of residential, commercial, and industrial designations in proper balance, as shown on the General Plan Land Use Maps; and
- b. Encouraging Economic Development and Public Facility policies that support local employment opportunities.

Housing Element

Goal EC-8.1: Provide for a variety of alternative housing options and the use of alternative, innovative, and appropriate technology.

Policy EC-8.6.1: Encourage energy efficient site design in new land divisions, particularly in larger subdivisions and planned developments where there is sufficient area for alternate designs as follows:

- a. Encourage lot patterns that maximize proper solar orientation;
- b. Utilize interconnected streets and traffic calming features to reduce fuel consumption and encourage walkability;
- c. Provide adequate on-site usable open space and relate the type, amount and location of open space to the types of households expected to occupy the building;
- d. Include in the project, or locate project within walking distance to (generally, one-quarter to one-half mile), needed amenities such as storage, laundry, community rooms, recycling, childcare facilities, and convenient shopping facilities.

Policy EC-8.6.3 Promote infill within existing residential neighborhoods and intensify land uses consistent within existing neighborhood or commercial district patterns in developed areas currently served by municipal services.

- Policy EC-8.6.4: In addition to Title 24, Part 6 of the California Code of Regulations, the County shall promote energy efficiency and alternative energy sources for new and rehabilitated housing using incentives and site plan review recommendations, which shall include the following:
- a. Passive solar design to maximize solar energy capture.
 - b. Preservation of native trees that provide shade, reduce energy costs, and slow structural deterioration.
 - c. Incorporation of adequate deciduous tree cover on the south and west side of dwellings and along streets to help reduce the cooling demand during summer months and capture maximum solar energy in winter.
 - d. Maximization of use of daylight and energy-efficient lighting, such as compact fluorescent lighting indoors and LED lighting outdoors.
 - e. Energy-Star rated appliances, solar hot water heating systems, and other plumbing, mechanical, electrical, and solar permits issued for systems that either produce energy or save natural resources, such as wind-generated electrical systems, tankless water heaters, and highly efficient heating, ventilation and air conditioning systems.
 - f. Water conservation features, including reclamation; landscaping appropriate to the site's climate, soils, and water resources; and water-saving irrigation practices.
 - g. Solid waste reduction and recycling.
- Program EC-8.6.5: Adopt a solar access ordinance that establishes development standards for new development to protect the solar access of adjacent properties.
- Policy EC-8.6.5: Continue to strongly support the current housing weatherization programs and Energy Crisis Intervention Program within Nevada County.

City of Grass Valley 2020 General Plan

The candidate sites for rezoning are located within three general areas of Nevada County. One of the areas where the candidate sites are located includes the Grass Valley Sphere of Influence. The Conservation/Open Space Element of the Grass Valley 2020 General Plan includes several goals, objectives and policies with respect to air quality, including the following:

- Goal 6-COSG: Assure compliance with and understanding of air and water quality regulations and standards.
- Objective 16-COSO: Inclusion of air and water quality considerations in land use decisions rendered by the Planning Commission and City Council.

- Policy 22-COSP: Implement circulation/transportation measures designed to reduce reliance on the automobile.
- Implementation 16-COSI: Study and consider a permanent ban on open burning within City limits.
- Implementation 17-COSI: Incorporate applicable mitigation measures specified in the *Indirect Source Review Guidelines of the Northern Sierra Air Quality Management District, 1996-1997*, in all future discretionary land use approvals.

4.5.3 ENVIRONMENTAL ANALYSIS

THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the *CEQA Guidelines*, the proposed project would result in significant air quality impacts if it would:

- Conflict with or obstruct implementation of the applicable air quality plan
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)
- Expose sensitive receptors to substantial pollutant concentrations
- Create objectionable odors affecting a substantial number of people

Standards-Based Thresholds

Criteria Pollutants

For the purposes of this air quality analysis, actions that violate federal standards for criteria pollutants (i.e., primary standards designed to safeguard the health of people considered to be sensitive receptors while outdoors and secondary standards designed to safeguard human welfare) are considered significant impacts. Additionally, actions that violate state standards developed by the CARB or criteria developed by the NSAQMD, including thresholds for criteria pollutants, are considered significant impacts. Projects that would generate 136 tons per day of ROG, NO_x or PM₁₀ are considered to have a potentially significant regional air quality impact.

Among the criteria used by the NSAQMD to evaluate a project's air quality impact is the project's potential to emit pollutants exceeding the established threshold amounts for individual pollutants. Level A thresholds require only standard mitigation measures applicable to all projects, which the NSAQMD typically recommends. Level B thresholds represent a "cumulatively considerable" emission that requires additional mitigation. Level C thresholds require the use of all feasible and reasonable mitigation strategies. Unmitigated emissions above 136 pounds per day are considered to represent a significant impact. In cases when predicted emissions are projected to be below the Level C thresholds but exceeding the Level A thresholds (thereby placing project related air quality impacts at Level B), the project would be considered potentially significant, subject to the recommended

measures of NSAQMD’s *Mitigation for Use During Design and Construction Phases for Classifications as Level B Threshold* (2009). Implementation of the appropriate NSAQMD mitigation from this collection of measures would reduce Level B air quality impacts to a less than significant level. Therefore, NSAQMD Level C thresholds were used. Refer to Table 4.5-3, *NSAQMD Thresholds for Significant Contribution to Regional Air Pollution*.

**Table 4.5-3
 NSAQMD Thresholds for Significant Contribution to Regional Air Pollution**

Criteria Pollutant	Threshold (pounds per day)
Oxides of Nitrogen (NO _x)	136
Reactive Organic Gases (ROG)	136
Particulate Matter (PM ₁₀)	136

Source: NSAQMD, *Draft Guidelines for Assessing Air Quality Impacts of Land Use Projects*, 2009.

POTENTIAL IMPACTS AND MITIGATION MEASURES

Short-Term (Construction) Air Quality

4.5-1 THE PROPOSED PROJECT WOULD RESULT IN TEMPORARY CONSTRUCTION-RELATED DUST AND VEHICLE EMISSIONS DURING CONSTRUCTION WITHIN THE PROJECT AREA.

Level of Significance Before Mitigation: Potentially Significant Impact

Impact Analysis

The County’s housing needs would be accommodated within vacant or underutilized land zoned for residential use. Construction activities for residential projects would generate air pollutant emissions during site grading, operation of construction equipment and vehicle activities. Under the Housing Element Rezone Implementation Program, varying amounts of construction would occur over time. Temporary air emissions would generally result from the following activities:

- Particulate (fugitive dust) emissions from the proposed demolition, grading and building construction
- Exhaust emission from the construction equipment and the motor vehicles of the construction crew

The thresholds of significance recommended by the NSAQMD for construction emissions were developed for individual development projects. Construction-related emissions are described as short term or temporary in duration and have the potential to represent a significant impact with respect to air quality. Implementation of the proposed Housing Element Rezone Implementation Program is dependent on individual housing decisions, employment opportunities, provision of services for housing and supporting commercial uses, land use decisions by the County and other public agencies, regional transportation planning decisions, the decisions of financial institutions related to development projects, and other similar factors.

Future development within the rezone areas would be reviewed in relation to residential uses, revenue-generating employment uses, housing affordability, provision and financing of infrastructure and public facilities, mechanisms for funding of ongoing service needs and overall coordination of improvements with other future development projects. Subsequent

implementation of future projects and plans would continue to define specific phasing at a detailed level and be reviewed by the County to ensure that development occurs in a logical manner consistent with policies in the Nevada County General Plan, and that additional environmental review is conducted under CEQA, as needed.

The proposed Housing Element Rezone Implementation Program identifies future land uses and does not contain specific development proposals. Construction-related emissions that may occur at any one time are speculative and cannot be accurately determined at this stage of the planning process. Assuming relatively robust economic conditions over the next 20 to 25 years, construction activities would occur at the candidate sites, but the rate of development cannot be anticipated. Construction-related emissions could lead to the violation of an applicable air quality standard or contribute substantially to an existing or projected air quality violation.

Fugitive Dust Emissions

Short-term impacts from the project would result in fugitive particulate matter emissions through grading, excavation, trenching, filling and other construction activities. NSAQMD Regulation 2, Rule 226 (Dust Control) specifies control measures for outdoor sources of fugitive particulate matter emissions (which require watering of inactive and perimeter areas, track out requirements, etc.). As a result, future individual projects within the candidate sites would be required to adhere to Mitigation Measure 4.5-1a, which specifies dust control measures during construction activities.

Reactive Organic Gas Emissions

In addition to gaseous and particulate emissions, the application of asphalt and surface coatings creates ROG emissions, which are ozone precursors. ROG emissions from future individual projects associated with paving and architectural coating activities would occur. All architectural coatings for proposed project structures within the candidate sites would be required to adhere to specifications on painting practices as well as regulating the ROG content within paint; refer to Mitigation Measure 4.5-1b.

Construction Equipment and Worker Vehicle Exhaust

Exhaust emissions from future construction activities under the Housing Element Rezone Implementation Program include emissions associated with the transport of machinery and supplies, emissions produced onsite as the equipment is used and emissions from trucks transporting materials to and from project sites. Emitted pollutants would include ROG, NO_x and PM₁₀. Standard NSAQMD regulations, such as maintaining all construction equipment in proper tune and shutting down equipment when not in use for extended periods of time, would be adhered to and would reduce emissions.

With implementation of Mitigation Measure 4.5-1a and applicable NSAQMD regulations, construction emissions would be reduced. However, due to the scale of the project and extent of fugitive dust, ROG and exhaust emissions, construction activities would result in increased concentrations of nonattainment pollutants (i.e., O₃ and PM₁₀). Incorporation of NSAQMD suggested emissions reduction measures would not inherently reduce impacts to less than significant levels; significance is determined by comparing project emissions to NSAQMD thresholds. At this time, it is not known when the candidate sites would be under construction and it would be speculative to estimate which of the sites would be under construction simultaneously. Also, the construction emission reduction measures, and consequently, the amount of reductions that may be achieved from them, cannot be identified at this time because the NSAQMD does not currently have any established

emissions reduction programs. Therefore, for the purpose of this EIR analysis, air emissions from fugitive dust, ROG and exhaust associated with construction activities would be significant and unavoidable.

Construction Odors

Construction activities occurring under the Housing Element Rezone Implementation Program could also generate airborne odors associated with the operation of construction vehicles (i.e., diesel exhaust) and the application of architectural coatings. However, these odors are not generally considered offensive and would cease upon completion of construction. Emissions would occur during daytime hours only and would be isolated to the immediate vicinity of the construction site and activity. As such, these odors would not affect a substantial number of people and impacts would be limited to people living and working near the source. Emissions produced during grading and construction activities would be short term, as they would exist only during construction. The NSAQMD only has thresholds for the PM₁₀, ROG and NO_x criteria pollutants since the Basin is designated nonattainment for state PM₁₀ and federal and state O₃ (ROG and NO_x are O₃ precursors). Due to the types of odors that would occur in the Housing Element Rezone Implementation Program area and limited exposure, implementation of the Housing Element Rezone Implementation Program would not create construction-related objectionable odors affecting a substantial number of people, and impacts would be less than significant.

Naturally Occurring Asbestos

Pursuant to guidance issued by the Governor's Office of Planning and Research, State Clearinghouse, lead agencies are encouraged to analyze potential impacts related to naturally occurring asbestos. Naturally occurring asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects and at quarry operations.

Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties. These rocks are particularly abundant in the counties of the Sierra Nevada foothills, the Klamath Mountains and Coast Ranges. According to the Department of Conservation Division of Mines and Geology, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Report* (August 2000), ultramafic rocks do not have the potential to occur in the vicinity of the candidate sites in Lake of the Pines and Penn Valley. However, ultramafic rocks have the potential to occur in the vicinity of the Grass Valley Sphere of Influence. As a result, these sites are located in an area where naturally occurring asbestos is likely to be present.

Earthen material containing naturally occurring asbestos equal to or greater than one percent is considered a hazardous waste. It is also regulated as a hazardous substance under the Hazardous Substance Account Act (HSAA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). As asbestos is a known carcinogen, there are certain precautions that are required for naturally occurring asbestos, most related to dust control.

The Statewide Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying and Surface Mining Operations (Asbestos ATCM), codified in the California Code of Regulations, Title 17, Section 93105, contains requirements for projects located in areas

mapped as having, or observed to have, ultramafic rock or serpentinite. For residential developments in ultramafic areas, the NSAQMD requires either the placement of at least 3 inches of non-asbestos-containing material or paving on top of the native soil. The Statewide Asbestos Airborne Toxic Control Measure for Surfacing Applications (Surfacing ATCM), codified in the California Code of Regulations, Title 17, Section 93106, prohibits the use of material containing 0.25 percent asbestos or greater for surfacing of trails, playgrounds, pedestrian areas, roads, landscaping, parking lots, etc. Due to the potential for naturally occurring asbestos to be present within the Grass Valley candidate sites, Mitigation Measure 4.5-1c would be required to reduce potential impacts to a less than significant level.

Mitigation Measures:

The following mitigation measures apply to all sites.

- 4.5-1a Prior to the issuance of grading permits, all construction contracts shall include dust control mitigation requirements. All construction contracts shall require the following:
- All construction activities shall be subject to the requirements of the NSAQMD's Regulation 2, Rule 226 regarding dust control.
 - Alternatives to open burning of vegetative material on the project site shall be used unless deemed infeasible by the NSAQMD. Suitable alternatives are chipping, mulching or conversion to biomass fuel.
 - Contractors shall be responsible for ensuring that adequate dust control measures are implemented in a timely manner during all phases of project development and construction.
 - All material excavated, stockpiled or graded shall be sufficiently watered, treated or covered to prevent fugitive dust from leaving the property boundaries and causing a public nuisance or violation of an ambient air standard. Watering shall occur at least twice daily, with complete site coverage, preferably in the mid-morning and after work is completed each day.
 - All areas (including unpaved roads) with vehicle traffic shall be watered or have a dust palliative applied as necessary for stabilization of dust emissions.
 - All onsite vehicle traffic shall be limited to a speed of 15 mph on unpaved roads.
 - All land clearing, grading, earth moving or excavation activities shall be suspended as necessary to prevent excessive windblown dust when winds are expected to exceed 20 miles per hour. Temporary traffic control shall be provided during all phases of the construction to improve traffic flow as deemed appropriate by the County and/or applicable local agencies.
 - Construction activities shall be scheduled to direct construction traffic flow to off-peak hours as much as possible.
 - All inactive portions of the construction site shall be covered, seeded, or watered until a suitable cover is established. Alternatively, nontoxic soil stabilizers shall be applied (according to manufacturer's specifications) to all inactive construction areas (previously graded areas which remain inactive for 96 hours) in accordance with County

standards. Acceptable materials that may be used for chemical soil stabilization include petroleum resins, asphaltic emulsions, acrylics and adhesives, which do not violate Regional Water Quality Control Board or California Air Resources Board standards.

- Track-out devices (e.g., gravel pads, wheel shakers, etc.) or wheel washers shall be installed where project vehicles and/or equipment enter and/or exit onto paved streets from unpaved roads. Vehicles and/or equipment shall be washed prior to each trip, as necessary to prevent visible dust emissions from adhering dirt or deposition on roadways.
- All material transported offsite shall be either sufficiently watered or securely covered to prevent public nuisance.
- Ground cover shall be re-established onsite through seeding and watering in accordance with the local grading ordinance.
- All mobile and stationary equipment shall be properly maintained.
- The County shall require projects to utilize best management practices and the use of construction equipment that meets applicable non-road diesel fuel emission standards.

4.5-1b The following measures shall be implemented by the contractor to reduce ROG emissions resulting from application of architectural coatings:

- Use high-pressure-low-volume (HPLV) paint applicators with a minimum transfer efficiency of at least 50 percent;
- Use required coatings and solvents with a low ROG content VOC pursuant to the limits in the U.S. EPA National Architectural Coating Rule (40 CFR Part 59); and
- Use pre-painted construction materials.

4.5-1c During ground disturbance activities associated with the Grass Valley candidate sites, the construction contractor shall comply with CARB's Airborne Toxic Control Measures (ATCM) addressing Naturally Occurring Asbestos (NOA) (Section 93105 and 93106 of Title 17 of the California Code of Regulations). These ATCMs regulate construction, grading, quarrying and surface mining operations, as well as surfacing applications. It should be noted that this mitigation measure applies to the candidate sites within the Grass Valley Sphere of Influence. NOA is not anticipated to occur within the candidate sites in Penn Valley or Lake of the Pines.

Level of Significance After Mitigation: Significant and Unavoidable Impact.

Long-Term (Operational) Air Quality

4.5-2 THE PROPOSED PROJECT COULD RESULT IN AN OVERALL INCREASE IN LOCAL AND REGIONAL MOBILE AND STATIONARY SOURCE EMISSIONS, WHICH MAY EXCEED AIR QUALITY STANDARDS.

Level of Significance Before Mitigation: Potentially Significant Impact

Impact Analysis

Operational emissions would be generated by both stationary and mobile sources due to normal day-to-day activities occurring in candidate sites area after development. Mobile emissions are those generated by the motor vehicles traveling to and from the project area. Stationary source emissions are those generated by the consumption of natural gas for space and water heaters, landscape maintenance equipment, and consumer products. Through the environmental review process for future proposed individual projects, additional mitigation may also be required to further reduce emissions and potential impacts.

Mobile Source Emissions

Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions. Depending upon the pollutant being discussed, the potential air quality impact may be of either regional or local concern. For example, ROG, NO_x and PM₁₀ are all pollutants of regional concern (NO_x and ROG react with sunlight to form O₃ [photochemical smog], and wind currents readily transport PM₁₀). However, CO tends to be a localized pollutant, dispersing rapidly at the source.

As previously discussed, the Basin is a nonattainment area for federal and state air quality standards for O₃ and state PM₁₀. NO_x and ROG are regulated O₃ precursors. A precursor is defined as a directly emitted air contaminant that, when released into the atmosphere forms a secondary air contaminant for which an ambient air quality standard has been adopted. Development of the approximately 2,675 dwelling units that could occur with project implementation is estimated to generate approximately 8,860 net average daily trips (ADT). The net project-related vehicle emissions associated with the 2,675 dwelling units have been estimated using the California Emissions Estimator Model (CalEEMod). This model predicts emissions of criteria pollutants from motor vehicle traffic associated with new or modified land uses. Table 4.5-4, *Long-Term Operational Air Emissions*, presents the anticipated area and mobile source emissions.

Stationary Source Emissions

Development of the 2,675 housing units would generate increased area and energy source emissions. Stationary source emissions would be generated as a result of an increased demand for electrical energy and natural gas associated with implementation of the proposed project. This assumption is based on the supposition that those power plants supplying electricity to the site are utilizing fossil fuels. Electric power generating plants are distributed throughout the Basin and western United States, and their emissions contribute to the total regional pollutant burden. The primary use of natural gas by the proposed land uses would be for combustion to produce space heating, water heating, other miscellaneous heating or air conditioning, consumer products and landscaping. Table 4.5-4 presents the net area and energy source emissions that could result from the proposed project.

**Table 4.5-4
Long-Term Operational Air Emissions**

Source ²	Estimated Annual Average Emissions (pounds/day) ¹				
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}
EXISTING/DISPLACED EMISSIONS					
Area Sources	28.98	0.85	74.94	1.39	1.38
Energy Sources	0.35	2.98	1.27	0.24	0.24
Mobile Sources	73.84	229.60	609.21	89.70	9.97
Total Existing Emissions	103.17	233.43	682.42	91.40	11.59

Table 4.5-4, continued

Source ²	Estimated Annual Average Emissions (pounds/day) ¹				
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}
PROPOSED EMISSIONS					
Area Sources	92.50	2.71	229.62	4.45	4.41
Energy Sources	1.11	9.52	4.05	0.77	0.77
Mobile Sources	170.86	531.28	1,409.69	207.73	15.91
Total Proposed Emissions	264.47	543.51	1,643.36	212.95	28.24
Net Increase Over Existing/Displaced	161.30	310.08	960.94	121.55	16.65
<i>NSAQMD Level C Threshold²</i>	>136	>136	NA	>136	NA
Is Threshold Exceeded? (Significant Impact)	Yes	Yes	NA	No	NA

Notes:

1 – Based on CalEEMod modeling results, worst-case seasonal emissions for area and mobile emissions have been modeled.

2 – The NSAQMD has developed a tiered approach to significance levels: projects with emissions meeting Level A thresholds require the most basic mitigations; projects with emissions in the Level B range require more extensive mitigations; and projects that exceed Level C thresholds require the most extensive mitigations. Short- or long-term increases in emissions in excess of Level C thresholds for NO_x, ROG, or PM₁₀ would be considered significant.

Refer to Appendix D, Air Quality/Greenhouse Gas Emissions Data, for assumptions used in this analysis.

As shown in Table 4.5-4, the net emissions generated by mobile, area and energy sources associated with implementation of the Housing Element (allowing for approximately 2,680 residential dwelling units) would exceed established NSAQMD thresholds for ROG and NO_x.

The NSAQMD *Draft Guidelines for Assessing and Mitigating Air Quality Impacts of Land Use Projects* (Draft Guidelines) contains suggested mitigation for mobile source emissions. This mitigation recommends the following:

- Streets shall be designed to maximize pedestrian access to transit stops.
- Provide for on-site road and off-site bus turnouts, passenger benches and shelters as demand and service routes warrant, subject to review and approval by local transportation planning agencies.
- Larger projects may be required to contribute a proportionate share to the development and/or continuation of a regional transit system. Contributions may consist of dedicated right-of-way, capital improvements, easements, etc.
- Provide for pedestrian access between bus service and major transportation points within the project, and between separate sections of the project, where feasible.
- Contribute to traffic-flow improvements (i.e., right-of-way, capital improvements, etc.) that reduce emissions and are not considered as substantially growth inducing.
- Larger projects may be required to provide for, contribute to, or dedicate land for the provision of off-site bicycle trails linking the project to designated bicycle commuting routes in accordance with an adopted citywide or countrywide bikeway plan.

Additionally, a significant contributor to area and energy source emissions from the proposed project is wood-burning devices. The NSAQMD Draft Guidelines include the following recommended mitigation for land use emissions:

- Incorporate mixed uses, where permitted by local development regulations, to achieve a balance of commercial, employment, retail and housing options where feasible.

- Larger projects shall provide for neighborhood parks or other recreational options such as trails to minimize vehicle travel to offsite recreational uses and/or commercial areas.
- Provide densities of nine units per acre or greater, where allowed by the General Plan and/or Zone Plan, along bus routes and at bus stops to encourage transit use, where feasible.

Mitigation would be required to further reduce mobile source and area source emissions. Mitigation Measure 4.5-2a would incorporate transit measures to reduce mobile source emissions, and Mitigation Measure 4.5-2b would reduce area source emissions by allowing only natural gas/LPG fireplaces or stoves. Although Mitigation Measure 4.5-2b would reduce hearth-related (wood burning fireplaces or stoves) emissions, the combination of mobile source and remaining area source emissions would still exceed the NSAQMD operational thresholds.

The Nevada County General Plan includes various Goals and Policies that would reduce mobile and stationary source emissions. Mobile source emissions would be reduced with implementation of General Plan Goals RD-4.1 through RD-4.4, which would reduce dependence on the automobile, decrease vehicle miles traveled while encouraging transit ridership and vehicle occupancy, and encourage land use patterns that promote the use of alternative transportation. General Plan Policy 14.7 requires the County to cooperate with all appropriate agencies and other regional transportation agencies that include surrounding counties to develop programs designed to maximize the participation of employers in employer-operated van pool and/or ride sharing for employees, and mass transit service for both employees and customers.

General Plan Policy 14.2 requires the County to include energy efficiency standards as part of the Comprehensive Site Development Standards. These measures include maximized solar access to optimize energy efficiency. General Plan Policy 14.4 requires cooperation with the NSAQMD to work with the County, local public utility districts, other public agencies and the private sector to encourage the development and implementation of educational and incentive programs to encourage energy conservation, house weatherization, solar energy use in new and existing buildings, and provide air quality monitoring and advisory programs. General Plan Policy EC-8.6.3 promotes infill development and General Plan Policy EC-8.6.4 includes requirements for water conservation features including reclamation and efficient landscaping.

Conclusion

Implementation of the proposed Housing Element would allow for the development of a maximum 2,675 additional housing units within the candidate areas. Development of these additional housing units would generate increased operational air emissions. Total operational emissions are described in terms of area source and mobile source emissions. As indicated in Table 4.5-4, operational emissions from buildout of the candidate sites would exceed the NSAQMD thresholds for ROG and NO_x. With incorporation of the NSAQMD suggested mitigation for mobile source emissions (Mitigation Measure 4.5-2a) and Mitigation Measure 4.5-2b, the Housing Element Rezone Implementation Program operational emissions would remain above NSAQMD thresholds.

It should be noted that the emissions modeled in Table 4.5-4 are for the aggregate total of 18 candidate sites assuming the maximum development potential. Additionally, one of the site selection criteria was the proximity to local services. The project would also increase density. Both the increase in density and proximity to local services would reduce vehicle miles

traveled (VMT), thereby reducing mobile source emissions. Environmental review of future projects within the candidate sites as part of the Housing Element Rezone Implementation Program may require additional project-specific mitigation to reduce project impacts to less than significant levels. Due to the substantial amount of development that would be accommodated by the proposed Housing Element Rezone, long-term operational impacts would be significant and unavoidable.

General Plan Goals and Policies: General Plan Goals RD-4.1 through RD-4.4, Goal EC-8.1, Policy 14.2, Policy 14.4, Policy 14.7, Policy EC-8.6.1, Policy EC-8.6.3, Policy EC-8.6.4, Policy EC-8.6.5, and Program EC-8.6.5.

Mitigation Measures:

The following mitigation measures apply to all sites.

- 4.5-2a Prior to the approval of any site plans, the Planning Director or City of Grass Valley Planning Director for Sites 1-9, shall confirm that all project plans incorporate the suggested mitigation measures for mobile source emissions identified in the *NSAQMD Draft Guidelines for Assessing and Mitigating Air Quality Impacts of Land Use Projects* (Draft Guidelines). These measures include the following:
- Streets shall be designed to maximize pedestrian access to transit stops.
 - Provide for on-site road and off-site bus turnouts, passenger benches, and shelters as demand and service routes warrant subject to review and approval by local transportation planning agencies.
 - Larger projects may be required to contribute a proportionate share to the development and/or continuation of a regional transit system. Contributions may consist of dedicated right-of-way, capital improvements, easements, etc.
 - Provide for pedestrian access between bus service and major transportation points within the project, and between separate sections of the project, where feasible.
 - Contribute to traffic-flow improvements (i.e., right-of-way, capital improvements, etc.) that reduce emissions and are not considered as substantially growth inducing.
 - Larger projects may be required to provide for, contribute to, or dedicate land for the provision of off-site bicycle trails linking the project to designated bicycle commuting routes in accordance with an adopted citywide or countrywide bikeway plan.
- 4.5-2b Only natural gas/liquefied petroleum gas (LPG) fireplaces or stoves shall be permitted within the candidate sites. EPA Phase II-certified wood-burning fireplaces or stoves may be used if natural gas/LPG fireplaces or stoves are considered infeasible based on consultation with the County and NSAQMD. Conventional open-hearth fireplaces shall not be permitted.

Level of Significance After Mitigation: Significant and Unavoidable Impact.

Odor

4.5-3 THE PROPOSED PROJECT COULD RESULT IN AN OVERALL INCREASE IN ODORS WITHIN THE PROJECT AREA.

Level of Significance Before Mitigation: Less Than Significant Impact

Impact Analysis

Future residential land uses are generally not anticipated to create objectionable odors affecting a substantial number of people. The potential source of odors would be new waste receptacles within the community. The receptacles would be stored in areas and in containers, as required by County Department of Environmental Health regulations, and be emptied on a regular basis, before potentially substantial odors have developed. Consequently, implementation of the proposed Housing Element Rezone Implementation Program would not create operational-related objectionable odors affecting a substantial number of people and potential impacts would be less than significant.

Mitigation Measures: No mitigation is required.

Level of Significance After Mitigation: Not Applicable

Carbon Monoxide Hot Spots

4.5-4 CARBON MONOXIDE HOT SPOTS MAY OCCUR AS A RESULT OF THE PROPOSED PROJECT.

Level of Significance Before Mitigation: Less Than Significant Impact

Impact Analysis

Carbon monoxide emissions are a function of vehicle idling time, meteorological conditions and traffic flow. Under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthful levels (i.e., adversely affect residents, school children, hospital patients, the elderly, etc.). An intersection operating at a level of service (LOS) D or worse has the potential to result in a CO hotspot, as stated in the NSAQMD Draft Guidelines. Because traffic congestion is highest at intersections where vehicles queue and are subject to reduced speeds, these hot spots are typically produced at intersections. Table 4.5-5, *Carbon Monoxide Concentrations*, provides the list of intersections within the project area that required a CO hotspot analysis.

The projected traffic volumes were modeled using the BREEZE ROADS dispersion model. The resultant values were then added to an ambient concentration. A receptor height of 1.8 meters was used in accordance with the EPA's recommendations. The calculations assume a meteorological condition of almost no wind (0.5 meters/second), a flat topological condition between the source and the receptor and a mixing height of 1,000 meters. A standard deviation of five degrees was used for the deviation of wind direction. The suburban land classification was used for the aerodynamic roughness coefficient. This follows the BREEZE ROADS user's manual definition of suburban as, "regular coverage with large obstacles, open spaces roughly equal to obstacle heights, villages, mature forests."

For the purposes of this analysis, the ambient concentration used in the modeling was the highest one-hour measurement from 2011 (the latest year data was available) of NSAQMD

monitoring data at the Chico-Manzanita Monitoring Station (closest station to the project area that monitors CO). Actual future ambient CO levels may be lower due to emissions control strategies that would be implemented between now and the project buildout date.

**Table 4.5-5
 Carbon Monoxide Concentrations**

Intersection	1-Hour CO (ppm) ¹		8-Hour CO (ppm) ¹	
	1-Hour Standard	Future + Project	8-Hour Standard	Future + Project
Nevada City Highway and Brunswick Road	20 ppm	3.0	9 ppm	2.5
SR 20-49 SB Ramps and Brunswick Road	20 ppm	3.0	9 ppm	2.5
SR 20-49 NB Ramps and Brunswick Road	20 ppm	4.0	9 ppm	3.4
Sutton Way and Brunswick Road	20 ppm	3.1	9 ppm	2.6
Brunswick Road and Idaho Maryland Road	20 ppm	3.0	9 ppm	2.5
La Barr Meadows Road and East McKnight Way	20 ppm	3.0	9 ppm	2.5
La Barr Meadows Road and Site 2 Driveway	20 ppm	3.5	9 ppm	2.9
Brunswick Road and Sites 3-6 and 9 Driveway	20 ppm	3.6	9 ppm	3.0
Brunswick Road and Sites 7 and 8 Driveway	20 ppm	3.6	9 ppm	3.0
SR-49 and Cameo Drive	20 ppm	3.6	9 ppm	3.0
Rosewood Drive and Combie Road	20 ppm	2.9	9 ppm	2.4
SR-49 and Woodridge Drive	20 ppm	3.8	9 ppm	3.2
Cattle Drive and SR-20	20 ppm	3.5	9 ppm	2.9

Notes:

1. As measured at a distance of 10 feet from the corner of the intersection predicting the highest value. Presented 1 hour CO concentrations include a background concentration of 2.8 ppm. Eight-hour concentrations are based on a persistence of 0.84 of the 1-hour concentration.

The intersections in the study area currently operate at an LOS ranging from LOS A to LOS F for PM peak hour activities. At project buildout, the intersections would operate at LOS D or worse in an unmitigated condition. As indicated in Table 4.5-5, CO concentrations would be well below the state and federal standards. The modeling results are compared to the CAAQS for CO of 9 ppm on an eight-hour average and 20 ppm on a one-hour average. Neither the one-hour average nor the eight-hour average would be equaled or exceeded. Impacts in regards to CO hotspots would be less than significant.

Mitigation Measures: No mitigation is required.

Level of Significance After Mitigation: Not applicable.

Consistency with Air Quality Plan

4.5-5 THE PROJECT MAY NOT BE CONSISTENT WITH THE AIR QUALITY ATTAINMENT PLAN (AQAP) CRITERIA.

Level of Significance Before Mitigation: Potentially Significant Impact

Impact Analysis

A potentially significant impact to air quality would occur if the project would conflict with or obstruct implementation of the applicable Air Quality Plan. Although the project would represent an incremental negative impact to air quality in the Mountain Counties Air Basin, of primary concern is that project-related impacts have been properly anticipated in the regional air quality planning process and reduced whenever feasible. Therefore, it is

necessary to assess the project's consistency with the NSAQMD's adopted Air Quality Attainment Plan for ozone as well as the County's General Plan and growth forecasts. The purpose of the consistency finding is to determine if a project is inconsistent with the assumptions and objectives of the regional air quality plans, and thus, if it would interfere with the region's ability to comply with federal and state air quality standards. It is important to note that even if a project is found consistent, it could still have a significant impact on air quality under CEQA. Consistency with plans means that a project is consistent with the goals, objectives and assumptions in the respective plan to achieve the federal and state air quality standards.

The project proposes to accommodate the County's unmet housing need by rezoning sufficient acreage to higher density residential. The Housing Element Rezone Implementation Program would implement rezoning through the Zoning Map Amendment process to rezone sufficient acreage to higher density residential to meet low and very low income requirements. Current designations include Office Park (OP), Business Park (BP), Community Commercial (CC), Urban Medium Density Residential (UMD), Planned Development (PD) and Urban Single-Family Residential (USF). Current zoning designations include Office Professional (OP), Business Park (BP), Medium Density (R2), Residential Agriculture (RA), Community Commercial (C2), Interim Development Reserve (IDR) and Single-Family (R1), and three different overlay combining districts including Planned Development (PD), Scenic Corridor Combining District (SC) and Site Performance Combining District (SP). As the proposed project proposes densities of 16 or 20 units per acre, the proposed project is inconsistent with current zoning map designation for the proposed project sites.

The proposed project would require amendments to the existing Zoning Map and if necessary, the General Plan Land Use Map to ensure land use designations consistent with the proposed zoning of the sites to High Density (R3) District and Regional Housing Need (RH) Overlay District. It should be noted that all candidate sites would be rezoned to include the RH Combining District and to permit a minimum density of 16 units per acre. The sites within the Grass Valley SOI would be rezoned with a minimum density of 16 units per acre and an allowed maximum of 20 units per acre. Rezoning of the sites to R3 would permit densities of up to 20 dwelling units per acre within the incorporated area's spheres of influence and 15 units per acre elsewhere unless otherwise designated on the official zoning map, while the RH Overlay District would allow densities ranging from 16 to 20 units per acre.

Significance thresholds have been developed by the NSAQMD for criteria pollutants to assist in implementing attainment plans for the area. Assessment of air quality impacts of the project in relation to these significance thresholds determines whether or not the project is consistent with applicable air quality management plans. Impacts relative to NSAQMD thresholds are identified under the Short-Term (Construction) and Long-Term (Operational) Impact Analyses (refer to Impacts 4.5-1 and 4.5-2, respectively). Based on the above analysis, following implementation of recommended mitigation measures, the proposed project would result in significant air quality impacts and would, therefore, conflict with the applicable air quality management plans. The Housing Element Rezone Implementation Program would require amendments to the Zoning Map and the General Plan Land Use Map to increase density within the rezoned areas and therefore would exceed the growth projections in the area. Additionally, the significant air quality impacts could contribute to a pollutant for which the area is nonattainment. Therefore, this is considered to be a significant and unavoidable impact.

General Plan Goals and Policies: General Plan Goals RD-4.1 through RD-4.4, Goal EC-8.1, Policy 14.2, Policy 14.4, Policy 14.7, Policy EC-8.6.1, Policy EC-8.6.3, Policy EC-8.6.4, Policy EC-8.6.5, and Program EC-8.6.5.

Mitigation Measures:

The following mitigation measures apply to all sites:

Implement Mitigation Measures 4.5-1a, 4.5-1b, 4.5-1c, 4.5-2a, and 4.5-2b.

Level of Significance After Mitigation: Significant and Unavoidable Impact.