

4.3 AIR QUALITY

This section includes a summary of applicable regulations, a description of existing air quality conditions affecting Yuba County, and an analysis of potential air quality impacts of implementation of the 2030 General Plan.

4.3.1 REGULATORY SETTING

Air quality in Yuba County is regulated by the U.S. Environmental Protection Agency (EPA), California Air Resources Board (ARB), and the Feather River Air Quality Management District (FRAQMD). Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

Air quality regulations focus on the following air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM)¹, and lead. Because these are the most prevalent air pollutants known to be deleterious to human health, and extensive documents on health-effects criteria are available, these pollutants are commonly referred to as “criteria air pollutants.”

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

At the federal level, EPA has been charged with implementing national air quality programs. EPA’s air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments to the CAA were made by Congress in 1990.

The CAA required EPA to establish national ambient air quality standards (NAAQS). As shown in Table 4.3-2, EPA has established primary and secondary NAAQS for ozone, CO, NO₂, SO₂, PM₁₀, PM_{2.5}, and lead. The primary standards protect the public health, while the secondary standards protect the public welfare.

The CAA also required each state to prepare an air quality control plan, referred to as a state implementation plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins, as reported by their jurisdictional agencies. EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments, and to determine whether implementing the SIPs will achieve air quality goals. If EPA determines a SIP to be inadequate, a federal implementation plan that imposes additional control measures may be prepared for the nonattainment area. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be applied to transportation funding and stationary sources of air pollution in the air basin.

Federal Programs for Hazardous Air Pollutants

Air quality regulations also focus on hazardous air pollutants (HAPs), or in state parlance, toxic air contaminants (TACs). For those HAPs/TACs that may cause cancer, there is no safe level of exposure. This contrasts with the criteria air pollutants, for which acceptable levels of exposure can be determined and for which the ambient standards have been established (Table 4.3-1). EPA and ARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology for toxics (MACT and BACT) to limit emissions. These statutes and regulations, in conjunction with additional rules set forth by the districts, establish the regulatory framework for TACs.

¹ Particulate matter with an aerodynamic diameter of 10 microns or less is referred to as PM₁₀. PM_{2.5} includes a subgroup of finer particles that have an aerodynamic diameter of 2.5 microns or less.

EPA has programs for identifying and regulating HAPs. Title III of the CAAA directed EPA to promulgate national emissions standards for HAPs (NESHAP). The NESHAP may differ for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (TPY) of any HAP or more than 25 TPY of any combination of HAPs; all other sources are considered area sources. The emissions standards are to be promulgated in two phases. In the first phase (1992–2000), EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring MACT. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), EPA is required to promulgate health risk–based emissions standards were deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

The CAAA also required EPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions of, at a minimum, benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, CAAA Section 219 required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

ARB is responsible for coordination and oversight of state and local air pollution control programs in California and for implementation of the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required ARB to establish California ambient air quality standards (CAAQS) (Table 4.3-1). ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases, the CAAQS are more stringent than the NAAQS.

Differences in the standards are generally explained through interpretation of the health effects studies considered during the standard-setting process. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires all local air districts in the state to craft air quality plans to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts shall focus particular attention on reducing the emissions from transportation and areawide emission sources, and provides districts with the authority to regulate indirect sources.

Among ARB’s other responsibilities are:

- ▶ overseeing compliance by local air districts with California and federal laws;
- ▶ approving local air quality plans, submitting SIPs to EPA;
- ▶ monitoring air quality;
- ▶ determining and updating area designations and maps; and
- ▶ setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

Table 4.3-1 Ambient Air Quality Standards and Designations						
Pollutant	Averaging Time	California		National Standards ^a		
		Standards ^{b,c}	Attainment Status ^d	Primary ^{c,e}	Secondary ^{c,f}	Attainment Status ^g
Ozone	1-hour	0.09 ppm (180 µg/m ³)	NT ^j	– ^h	Same as Primary Standard	– ^h
	8-hour	0.070 ppm (137 µg/m ³)	NT ^j	0.75 ppm (147 µg/m ³)		U/A
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m ³)	U	35 ppm (40 mg/m ³)	–	U/A
	8-hour	9 ppm (10 mg/m ³)		9 ppm (10 mg/m ³)		
Nitrogen Dioxide (NO ₂)	Annual Arithmetic Mean	0.030 ppm (56 µg/m ³)	–	0.053 ppm (100 µg/m ³)	Same as Primary Standard	U/A
	1-hour	0.18 ppm (338 µg/m ³)	A	–		–
Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	–	–	0.030 ppm (80 µg/m ³)	–	U/A
	24-hour	0.04 ppm (105 µg/m ³)	A	0.14 ppm (365 µg/m ³)	–	
	3-hour	–	–	–	0.5 ppm (1300 µg/m ³)	
	1-hour	0.25 ppm (655 µg/m ³)	A	–	–	
Respirable Particulate Matter (PM ₁₀)	Annual Arithmetic Mean	20 µg/m ³	N	– ^h	Same as Primary Standard	U
	24-hour	50 µg/m ³		150 µg/m ³		
Fine Particulate Matter (PM _{2.5})	Annual Arithmetic Mean	12 µg/m ³	U	15 µg/m ³	Same as Primary Standard	N ^k
	24-hour	–	–	35 µg/m ³		
Lead ⁱ	30-day Average	1.5 µg/m ³	A	–	–	–
	Calendar Quarter	–	–	1.5 µg/m ³	Same as Primary Standard	–
Sulfates	24-hour	25 µg/m ³	A	No National Standards		
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m ³)	U			
Vinyl Chloride ⁱ	24-hour	0.01 ppm (26 µg/m ³)	–			

**Table 4.3-1
Ambient Air Quality Standards and Designations**

Pollutant	Averaging Time	California		National Standards ^a		
		Standards ^{b,c}	Attainment Status ^d	Primary ^{c,e}	Secondary ^{c,f}	Attainment Status ^g
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer — visibility of 10 miles or more (0.07—30 miles or more for Lake Tahoe) because of particles when the relative humidity is less than 70%.	U	No National Standards		

Notes: $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter; ppm = parts per million

- a National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when 99% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The $\text{PM}_{2.5}$ 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the U.S. Environmental Protection Agency for further clarification and current federal policies.
- b California standards for ozone, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2 , particulate matter, 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.
- c Concentration expressed first in units in which it was promulgated (i.e., parts per million [ppm] or micrograms per cubic meter [$\mu\text{g}/\text{m}^3$]). Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
- d Unclassified (U): A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.
 Attainment (A): A pollutant is designated attainment if the state standard for that pollutant was not violated at any site in the area during a 3-year period.
 Nonattainment (N): A pollutant is designated nonattainment if there was a least one violation of a state standard for that pollutant in the area.
 Nonattainment/Transitional (NT): A subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the standard for that pollutant.
- e National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
- f National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
- g Nonattainment (N): Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.
 Attainment (A): Any area that meets the national primary or secondary ambient air quality standard for the pollutant.
 Unclassifiable (U): Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.
- h The 1-hour ozone national ambient air quality standard (NAAQS) was revoked in 2005, and the annual PM_{10} NAAQS was revoked in 2006.
- i The California Air Resources Board has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for this pollutant.
- j The District has been redesignated from Nonattainment to Nonattainment-Transitional for the State designation for ozone occurs by operation of law. The change was confirmed by the CARB Board of Directors on March 25, 2010. HSC Section 40925.5.
- k The District has been redesignated to attainment for the annual $\text{PM}_{2.5}$ State AAQS. The change was adopted on the March 25, 2010, by the CARB Board of Directors.

Sources: ARB 2009d

State and Local Programs for Toxic Air Contaminants

TACs in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807 [Chapter 1047, Statutes of 1983]) and the Air Toxics Hot Spots Information and Assessment Act (AB 2588 [Chapter 1252, Statutes of 1987]). AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB can designate a substance as a TAC. To date, ARB has identified more than 21 TACs and adopted EPA's list of HAPs as TACs. Most recently, diesel PM was added to the ARB list of TACs.

Once a TAC is identified, ARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions.

The Air Toxics Hot Spots Information and Assessment Act requires existing facilities emitting toxic substances above a specified level to prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

ARB has adopted diesel-exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). In February 2005, ARB adopted new public-transit bus fleet rule and emissions standards for new urban buses. These rules and standards provide:

1. more stringent emission standards for some new urban bus engines beginning with 2002 model year engines,
2. zero-emission bus demonstration and purchase requirements applicable to transit agencies, and
3. reporting requirements under which transit agencies must demonstrate compliance with the public-transit bus fleet rule.

Milestones include the low-sulfur diesel fuel requirement, and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide. Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than current vehicles. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) have been reduced significantly over the last decade, and they will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies.

Estimated Diesel PM Reductions

With implementation of ARB's risk reduction plan, it is expected that diesel PM concentrations will be reduced by 75% in 2010 and 85% in 2020 from the estimated year 2000 level. At the time of the writing of this document, the ARB had not verified whether the 2010 target had been met (Taricco 2010). Adopted regulations are also expected to continue to reduce formaldehyde emissions from cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

To help provide information on land use compatibility and TAC sources, ARB published the *Air Quality and Land Use Handbook: A Community Health Perspective* in 2005 (ARB 2005). Although it is not a law or adopted policy, the handbook offers advisory recommendations for the siting of sensitive receptors near sources of TACs, such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries, dry cleaners, gasoline stations, and industrial facilities, to help keep children and other sensitive populations out of harm's way.

A number of comments on the handbook were provided to ARB by air districts, other agencies, real estate representatives, and others. The comments included concern about whether ARB was playing a role in local land

use planning, questions regarding the validity of relying on static air quality conditions over the next several decades in light of technological improvements, and support for providing information that can be used in local decision making.

At the local level, air pollution control or air quality management districts (such as the FRAQMD) may adopt and enforce ARB control measures. Under FRAQMD Rule 4-1 (“Permit Requirements”), Rule 10-1 (“New Source Review”), and Rule 10-3 (“Federal Operating Permit”), all sources that possess the potential to emit TACs are required to obtain permits from the district. FRAQMD limits emissions and public exposure to TACs through a number of programs and prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors.

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

FRAQMD attains and maintains air quality conditions in Sutter and Yuba Counties through air quality planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues.

The clean-air strategy of FRAQMD involves the preparation of plans and programs for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. FRAQMD also inspects stationary sources, responds to citizen complaints; monitors ambient air quality and meteorological conditions, and implements other programs and regulations required by the CAA, CAAA, and CCAA.

Feather River Air Quality Management District

In 1998, FRAQMD published the *Indirect Source Review Guidelines, A Technical guide to assess the Air Quality Impact of Land Use Projects Under the California Environmental Quality Act* (FRAQMD 1998). In 2010, the FRAQMD updated the 1998 guidelines.

FRAQMD has provided the California Environmental Quality Act (CEQA) planning guidance online (FRAQMD 2010) to assist with identification of significant adverse air quality impacts and suggest measures that will reduce potential project emissions early in the planning process. Because stationary sources like industrial facilities are largely regulated, the guidelines focus on transportation and land use control measures to reduce emissions to achieve and maintain federal and state health-based air quality standards. Many projects, particularly those proposing new stationary sources, are subject to FRAQMD rules and regulations in effect at the time of construction.

Specific rules applicable to the construction and operation of projects developed under the 2030 General Plan may include the following:

- ▶ **Rule 3.0—Visible Emissions.** A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than 3 minutes in any 1 hour which is as dark or darker in shade as that designated as No. 2 on the Ringelmann Chart, as published by the United States Bureau of Mines.
- ▶ **Rule 3.2—Particulate Matter Concentration.** A person shall not discharge into the atmosphere from any source particulate matter in excess of 0.3 grains per cubic foot of gas at standard conditions.
- ▶ **Rule 3.15—Architectural Coatings.** No person shall: (i) manufacture, blend, or repackage for sale within the District [FRAQMD]; (ii) supply, sell, or offer for sale within FRAQMD; or (iii) solicit for application or apply within FRAQMD, any architectural coating with VOC [volatile organic compound] content in excess of the corresponding specified manufacturer’s maximum recommendation.

- ▶ **Rule 3.16—Fugitive Dust Emissions.** A person shall take every reasonable precaution not to cause or allow the emissions of fugitive dust from being airborne beyond the property line, from which the emission originates, from any construction, handling or storage activity, or any wrecking, excavation, grading, clearing of land or solid waste disposal operation.
- ▶ **Rule 4.1—Permit Requirements.** Any person operating an article, machine, equipment, or other contrivance, the use of which may cause, eliminate, reduce, or control the issuance of air contaminants, shall first obtain a written permit from the Air Pollution Control Officer (APCO). Stationary sources subject to the requirements of Rule 10.3, Federal Operating Permit Program, must also obtain a Title V permit pursuant to the requirements and procedures of that rule.

Air Quality Plans

FRAQMD, which comprises Yuba and Sutter counties, in coordination with the other Northern Sacramento Valley Air Basin (NSVAB) air quality management districts and air pollution control districts of Butte, Colusa, Glenn, Shasta, and Tehama counties, prepared and submitted the 2006 *Air Quality Attainment Plan* (AQAP). The AQAP was drafted in compliance with the requirements set forth in the CCAA and specifically addresses the nonattainment status for ozone and PM₁₀. The CCAA also requires a triennial assessment of the extent of air quality improvements and emissions reductions achieved through the use of control measures. As part of the assessment, the AQAP must be reviewed and, if necessary, revised to correct for deficiencies in progress and to incorporate new data or projections.

In July 1997, EPA promulgated a new 8-hour ozone standard. This change lowered the standard for ambient ozone from 0.12 ppm averaged over 1 hour to 0.08 ppm averaged over 8 hours. In general, the 8-hour standard is more protective of public health and more stringent than the 1-hour standard. The new standard prompted new designations and nonattainment classifications in June of 2004. On June 15, 2005 the 1 hour ozone standard was revoked for all areas except the 8-hour ozone nonattainment Early Action Compact Areas (EAC) areas (those do not yet have an effective date for their 8-hour designations) in accordance with 40 CFR 50.9(b).

Transportation Conformity

Projects developed under the 2030 General Plan could require federal approvals. Transportation conformity is the federal regulatory procedure for linking and coordinating the transportation and air quality planning processes. Conformity provisions require that federal funding and approvals be given only to those transportation plans and projects that are consistent with air quality goals specified in the SIP. The SIP applies to the Sacramento Federal Nonattainment Area (SFNA), which includes southern Sutter County, but not Yuba County. However, some vehicle trips from the Yuba County likely contribute emissions to the SFNA. Conformity with the SIP means that emissions from transportation activities are at or below the motor vehicle emission budgets established in the SIP.

The region's transportation plan must conform to the SIP and show that implementation will not harm the region's chances of attaining the ozone standard. The Sacramento Area Council of Governments (SACOG), of which the County of Yuba County is a part, updated the Metropolitan Transportation Plan (MTP) in 2008, and a conformity determination was conducted by SACOG. The transportation air quality conformity determination performed for the 2008 MTP demonstrated that transportation projects planned for the region are consistent with the applicable SIP (SACOG 2008).

Odors

FRAQMD has identified types of facilities that have been known to produce odors that can be detected from one to five miles from the source. The actual distance from which odors would be detected would depend on the specific characteristics of the facility, the wind direction, and the sensitivity of the person detecting the odor. However, general guidelines for odor sources follow:

- ▶ wastewater treatment plants (up to 2 miles);
- ▶ pumping facilities (up to 1 mile);
- ▶ chemical manufacturing plants (up to 1 mile);
- ▶ asphalt batch plants (up to 2 miles);
- ▶ fiberglass manufacturing (up to 1 mile);
- ▶ painting/coating operations (up to 1 mile);
- ▶ feed lots/dairies (up to 1 mile);
- ▶ rendering plants (up to 5 miles);
- ▶ coffee roaster (up to 1 mile);
- ▶ food processing facility (up to 1 mile);
- ▶ metal smelting plants (up to 1 mile);
- ▶ landfills (up to 1 mile);
- ▶ composting facilities (up to 2 miles) and
- ▶ recycling facilities and solid waste transfer stations (up to 1 mile).

Offensive odors rarely cause any physical harm and no requirements for their control are included in federal or state air quality regulations. For this reason, FRAQMD has adopted a screening methodology for odors within the new indirect source review guidelines that assigns minimum distances for receptors from the odor sources identified above. Sources of odors are subject to the prohibited discharges regulations in the California Health & Safety Code (HSC) Section 41700. Since agriculture is prevalent in Yuba County, FRAQMD recommends taking possible agricultural odors sources into consideration when there is a possibility of siting receptors near agricultural operations. Two situations increase the potential for odor problems. The first occurs when a new odor source is located near existing sensitive receptors. The second occurs when new sensitive receptors are developed near existing sources of odor.

In the first situation, FRAQMD recommends operational changes, add-on controls, process changes, or buffer zones where feasible to address odor complaints. In the second situation, the potential conflict is considered significant if the project site is at least as close as any other site that has already experienced significant odor problems related to the odor source. For projects locating near a source of odors where there is no nearby development that may have filed complaints, and for odor sources locating near existing sensitive receptors, one approach to the determination of potential conflict is based on the distance and frequency at which odor complaints from the public have occurred in the vicinity of a similar facility.

4.3.2 ENVIRONMENTAL SETTING

Yuba County lies within the NSVAB, which also includes Butte, Colusa, Glenn, Shasta, Sutter, and Tehama counties. Different areas within the same Air Basin often share topographic characteristics, other physical characteristics, as well as sources of regional air pollutants. The ambient concentrations of air pollutant emissions are determined by the amount of emissions released by sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Existing air quality conditions in Yuba County and the rest of the NSVAB are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources, as discussed below.

TOPOGRAPHY

The dimensions of the NSVAB are approximately 216 miles north to south and 95 miles east to west at the widest part. The NSVAB is bounded on the west and north by the Coast Range and on the east by the southern portion of the Cascade Range and the northern portion of the Sierra Nevada. The surrounding mountain ranges reach heights of 3,500 feet in the southwest, 8,500 feet in the northwest, 1,700 feet in the southeast, and 10,500 feet in the northeast. These mountain ranges provide a substantial physical barrier to locally created pollution as well as that transported northward on prevailing winds from the Sacramento metropolitan area.

METEOROLOGY AND CLIMATE

The annual temperature, humidity, precipitation, and wind patterns of the NSVAB reflect the regional topography and the strength and location of a semipermanent, subtropical high-pressure cell. Summer temperatures that exceed 100°F, coupled with clear sky conditions, are favorable for ozone formation.

Most precipitation in the valley occurs during winter storms. The coastal mountain ranges induce winter storms from the Pacific Ocean to release precipitation on the western slopes, producing a partial rain shadow over the valley. The winds and unstable atmospheric conditions associated with the passage of winter storms result in periods of low air pollution and excellent visibility. However, between winter storms, high pressure and light winds lead to the creation of low-level temperature inversions and stable atmospheric conditions that can result in high concentrations of CO and PM.

Summer conditions in the NSVAB are typically characterized by high temperatures and low humidity, with prevailing winds from the south. Summer temperatures average approximately 90°F during the day and 50°F at night (FRAQMD 2010). Winter conditions in the NSVAB are characterized by occasional rainstorms interspersed with stagnant and foggy weather. Winter temperatures average in the low 50s (°F), and nighttime temperatures average in the upper 30s. Rainfall occurs mainly from late October to early May, averaging 17.2 inches per year, but this varies significantly from year to year. During winter, north winds are frequent, but winds from the south predominate (FRAQMD 2010). The predominant wind direction and speed is from the south at 8.0 miles per hour (mph) (ARB 1994).

Atmospheric Stability and Inversions

“Stability” describes the resistance of the atmosphere to vertical motion. The stability of the atmosphere depends on the vertical distribution of temperature. When the temperature decreases vertically at 10°C (50°F per 1,000 meters, the atmosphere is considered “neutral.” When the change in temperature is greater than 10°C per 1,000 meters, the atmosphere is considered “unstable.” When the change is less than 10°C per 1,000 meters, the atmosphere is termed “stable.”

NSVAB atmospheric stability categories range from extremely unstable conditions, which are present in spring and summer, through neutral to stable conditions, which are both present in fall and winter. Unstable conditions occur primarily during the daytime, when solar heating warms the lower atmospheric layers sufficiently. Under extremely unstable conditions, large fluctuations in horizontal wind direction are coupled with large mixing depths, which are the vertical depths available for diluting air pollution near the ground. As solar heating decreases, fluctuations in wind direction and the vertical mixing depth become less pronounced, resulting in neutral to stable conditions. Under the most stable conditions, which are present in the NSVAB in fall and winter, air pollution emitted into the atmosphere will travel downwind with poor dispersion. The dispersive power of the atmosphere decreases with progression through the categories from extremely unstable to stable.

The formation and dispersion of air pollutants is also affected by the presence or absence of significant temperature differences among atmospheric layers. For example, a layer of warmer air over a layer of cooler air is called an “inversion,” which can influence the mixing depth of the atmosphere and significantly affect air quality conditions. The NSVAB experiences two types of inversions that affect air quality. The first type of inversion layer contributes to photochemical smog by confining pollution to a shallow layer of air near the ground. This type of inversion occurs during the summer, when sinking air near the ground forms a “lid” over the region. The second type of inversion occurs when the air near the ground cools while the air aloft remains warm. This type of inversion occurs during winter nights and can cause localized air pollution “hot spots” near emission sources because of poor dispersion. The shallow surface-based inversions are present in the morning, but are often broken by daytime heating of the air layers near the ground.

EXISTING AIR QUALITY—CRITERIA AIR POLLUTANTS

Concentrations of criteria air pollutant emissions are used as indicators of ambient air quality conditions. A brief description of each criteria air pollutant (source types, health effects, and future trends) is provided below, along with the most current attainment area designations and monitoring data for the Yuba County vicinity.

Ozone

Ozone is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight, and the primary component of smog. Ozone is not emitted directly into the air, but is formed through complex chemical reactions between precursor emissions of ROG and NO_x in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_x are a group of gaseous compounds of nitrogen and oxygen that result from the combustion of fuels.

Ozone located in the upper atmosphere (stratosphere) acts in a beneficial manner by shielding the earth from harmful ultraviolet radiation that is emitted by the sun. However, ozone located in the lower atmosphere (troposphere) is a major health and environmental concern. Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and clear skies provide the optimum conditions for formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. Therefore, ozone is a regional pollutant that often affects large areas. In general, ozone concentrations over or near urban and rural areas reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry (Godish 2004).

Public Health of Effects of Ozone

The adverse health effects associated with exposure to ozone pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of ozone affect not only sensitive receptors, such as asthmatics and children, but healthy adults as well. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 parts per million (ppm) for 1 or 2 hours has been found to significantly alter lung functions by increasing respiratory rates and pulmonary resistance, decreasing the volume of air in each normal breath (tidal volume), and impairing respiratory mechanics. Ambient levels of ozone above 0.12 ppm are linked to symptomatic responses that include throat dryness, chest tightness, headache, and nausea. In addition to the above adverse health effects, evidence also exists relating ozone exposure to an increase in the permeability of respiratory epithelia; such increased permeability leads to an increase in the respiratory system's responsiveness to challenges and the interference or inhibition of the immune system's ability to defend against infection (Godish 2004).

Trends in Ozone Concentrations

Emissions of ozone precursors ROG and NO_x have decreased over the past several years as a result of more stringent motor vehicle standards and cleaner burning fuels. Consequently, peak 1-hour and 8-hour ozone concentrations in the NSVAB have declined overall by about 14% and 26%, respectively, during the last 20 years. However, peak ozone values in the NSVAB have not declined as rapidly over the last several years as they have in other urban areas. This can be attributed to the influx of pollutants into the NSVAB from other urbanized areas, such as the Sacramento metropolitan area, making the region both a transport contributor and a receptor of pollutants (ARB 2009b). ROG emissions have been decreasing for the last 30 years due to more stringent motor vehicle standards and new rules for control of ROG from various industrial coating and solvent operations (ARB 2009b).

Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 microns or less is referred to as PM₁₀. PM₁₀ consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires, and natural windblown dust; and particulate matter formed in the atmosphere by condensation and/or transformation of SO₂ and ROG (EPA 2009b). PM_{2.5} includes a subgroup of finer particles that have an aerodynamic diameter of 2.5 microns or less (ARB 2009a).

The adverse health effects associated with PM₁₀ depend on the specific composition of the particulate matter. For example, health effects may be associated with adsorption of metals, polycyclic aromatic hydrocarbons, and other toxic substances onto fine particulate matter (which is referred to as the “piggybacking effect”), or with fine dust particles of silica or asbestos. Generally, adverse health effects associated with PM₁₀ may result from both short-term and long-term exposure to elevated concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death (EPA 2009b).

Public Health of Effects of PM

PM_{2.5} poses an increased health risk because the particles can deposit deep in the lungs and contain substances that are particularly harmful to human health. Based on reviews of the latest scientific literature, ARB has concluded that PM_{2.5} is much more dangerous than previously estimated. New research suggests that even small increases in exposure increase the potential for earlier deaths. Every increase of 10 micrograms per cubic meter (µg/m³) of PM_{2.5} creates a 10% increase in risk of premature death to a person exposed. State ambient air quality standards are periodically reviewed to assess their adequacy in protecting public health, and this new information will be considered when the PM standards are next reviewed. Nonetheless, the new information indicates the need to continue to reduce exposure to PM_{2.5} (ARB 2009a).

Trends in PM Emissions

Direct emissions of both PM₁₀ and PM_{2.5} increased slightly in the NSVAB between 1975 and 2005, and are projected to increase through 2020. These emissions are dominated by areawide sources and primarily attributable to urban development. Direct emissions of particulate matter from mobile and stationary sources have remained relatively steady (ARB 2009a).

Carbon Monoxide (CO)

CO is a colorless, odorless, and poisonous gas produced by incomplete combustion of fuels, primarily from mobile (transportation) sources. In fact, 63% of the CO emissions in Yuba County are from mobile sources. The remainder of CO emissions is from area and stationary sources, such as residential fuel combustion, wood-burning stoves, open burning, electric utilities, and industrial sources (ARB 2009b).

Public Health of Effects of CO

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does, resulting in a drastic reduction in the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO concentrations include such symptoms as dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (EPA 2009b).

The highest CO concentrations are generally associated with cold, stagnant weather conditions that occur during the winter. In contrast to ozone, which tends to be a regional pollutant, CO tends to cause localized problems.

Trends in CO Emissions

Emissions of CO declined in the Sacramento Valley Air Basin between 1975 and 2005 and are projected to decrease through 2020. Motor vehicles are the largest source of CO emissions. With the introduction of new automotive emission controls to meet more stringent emission standards, motor vehicle CO emissions have been declining since 1975, despite increases in vehicle miles travelled (VMT). Stationary and area-wide source CO emissions have remained relatively steady since 1990, with additional emission controls offsetting growth. (ARB 2009b)

Nitrogen Dioxide

Nitrogen dioxide (NO₂) is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO₂ are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal-combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO₂ (EPA 2009b). The combined emissions of NO and NO₂ are referred to as nitrogen oxides (NO_x), which are reported as equivalent NO₂. Because NO₂ is formed and depleted by reactions associated with photochemical smog (ozone), the NO₂ concentration in a particular geographical area may not be representative of the local NO_x emission sources.

Public Health of Effects of NO₂

Inhalation is the most common route of exposure to NO₂. Because NO₂ has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of the adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, including coughing, difficulty with breathing, vomiting, headache, and eye irritation, during or shortly after exposure. After a period of approximately 4–12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe, symptomatic NO₂ intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment, with such symptoms as chronic bronchitis and decreased lung functions.

Trends in NO₂ Emissions

Emissions of NO_x decreased from 1990 to 2005 and are projected to continue decreasing from 2005 to 2020. On-road motor vehicles and other mobile sources are by far the largest contributors to NO_x emissions. More stringent mobile source emission standards and cleaner burning fuels have largely contributed to the decline in NO_x emissions (ARB 2009b).

Sulfur Dioxide

SO₂ is produced by such stationary sources as coal and oil combustion, steel mills, refineries, and pulp and paper mills.

Public Health of Effects of SO₂

The major adverse health effects associated with SO₂ exposure pertain to the upper respiratory tract. SO₂ is a respiratory irritant with constriction of the bronchioles occurring with inhalation of SO₂ at 5 ppm or more. On contact with the moist mucous membranes, SO₂ produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high SO₂ concentrations may result in edema of the lungs or glottis and respiratory paralysis.

Trends in SO₂ Emissions

The emission levels for SO₂ have declined after 1990. Most of the reduction in SO₂ emissions is for on-road motor vehicles and other mobile sources (ARB 2009b).

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, as discussed in detail below, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, EPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. EPA banned the use of leaded gasoline in highway vehicles in December 1995 (EPA 2009b).

Public Health of Effects of Lead

Once taken into the body, lead distributes throughout the body in the blood and is accumulated in the bones. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems and the cardiovascular system. Lead exposure also affects the oxygen carrying capacity of the blood. The lead effects most commonly encountered in current populations are neurological effects in children and cardiovascular effects (e.g., high blood pressure and heart disease) in adults. Infants and young children are especially sensitive to even low levels of lead, which may contribute to behavioral problems, learning deficits and lowered IQ.

Lead is persistent in the environment and accumulates in soils and sediments through deposition from air sources, direct discharge of waste streams to water bodies, mining, and erosion. Ecosystems near point sources of lead demonstrate a wide range of adverse effects including losses in biodiversity, changes in community composition, decreased growth and reproductive rates in plants and animals, and neurological effects in vertebrates (EPA 2009b).

Trends in Lead Emissions

As a result of EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector declined dramatically (95% between 1980 and 1999), and levels of lead in the air decreased by 94% between 1980 and 1999. Transportation sources, primarily airplanes, now contribute only 13% of lead emissions. A recent National Health and Nutrition Examination Survey reported a 78% decrease in the levels of lead in people's blood between 1976 and 1991. This dramatic decline can be attributed to the move from leaded to unleaded gasoline (EPA 2009b).

Lead emissions and ambient lead concentrations have decreased dramatically in California over the past 25 years. The rapid decrease in lead concentrations can be attributed primarily to phasing out the lead in gasoline. This phase-out began during the 1970s, and subsequent ARB regulations have eliminated virtually all lead from gasoline now sold in California. All areas of the state are currently designated as attainment for the state lead standard (EPA does not designate areas for the national lead standard). Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose "hot spot" problems in some areas. As a result, ARB has identified lead as a TAC.

MONITORING STATION DATA AND ATTAINMENT AREA DESIGNATIONS

Air pollutant concentrations are measured at several monitoring stations in the NSVAB. An air quality monitoring station on Almond Street in Yuba City is the closest monitoring station to Yuba County with sufficient data to meet EPA and ARB criteria for quality assurance. In general, the ambient air quality measurements from this monitoring station, although not recorded in Yuba County, are representative of the air quality in the General Plan area because of the close proximity of this monitoring station to the County line.

Table 4.3-2 summarizes the local air quality data from 2007 – 2009. Both ARB and EPA use this type of monitoring data to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify those areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are “nonattainment,” “attainment,” and “unclassified.” “Unclassified” is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of the nonattainment designation, called “nonattainment-transitional.” The nonattainment-transitional designation is given to nonattainment areas that are progressing and nearing attainment.

Ozone	2007	2008	2009
Maximum concentration (1-hr/8-hr avg, ppm)	0.095/0.081	0.092/0.080	0.089/0.076
Number of days State standard exceeded (1-hr)	1	0	0
Number of days national 1-hr/8-hr standard exceeded	0/3	0/1	0/1
Fine Particulate Matter (PM _{2.5})	*	*	*
Maximum concentration (µg/m ³)	45.0	127.2	41.8
Number of days national standard exceeded (measured ²)	6	9	2
Respirable Particulate Matter (PM ₁₀)	*	*	*
Maximum concentration (µg/m ³)	51.0	66.9	50.7
Number of days state standard exceeded (measured ²)	1	4	0
Number of days national standard exceeded (measured ²)	0	0	0
Carbon Monoxide	2004	2005	2006
Maximum concentration (1-hr/8-hr avg, ppm)	5.80/2.54	4.40/3.39	3.10/2.29
Number of days state standard exceeded	0	0	0
Number of days national standard exceeded	0	0	0
Notes: µg/m ³ = micrograms per cubic meter; ppm = parts per million.			
* There is insufficient (or no) data available to determine value.			
¹ Measurements from the Yuba City–Almond Street station.			
² Measured days are those days that an actual measurement was greater than the level of the state daily standard or the national daily standard. Measurements are typically collected every 6 days. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.			
Source: ARB 2009d			

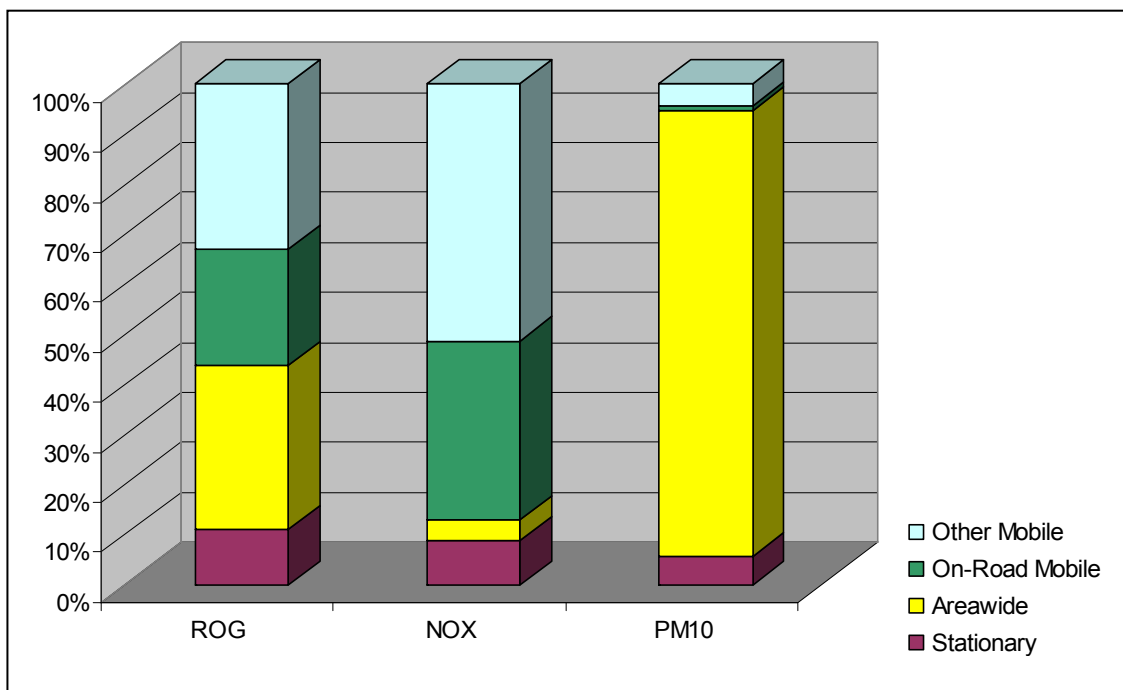
Yuba County is classified as nonattainment for the PM_{2.5} national standard and attainment or unclassified for all other national standards. Yuba County is classified as nonattainment transitional for the 1 hour and 8 hour state ozone standard, and nonattainment for the state PM₁₀ standard, except as previously mentioned Yuba County is classified as attainment or unclassified for all remaining state standards.

4.3.3 EMISSION SOURCES

Approximately 60–70% of the air pollution in the FRAQMD area comes from mobile sources, which includes on-road and off-road motor vehicles (including cars, trucks, planes, trains, tractors, combines, buses, motorcycles, and boats) (see Exhibits 4.3-1 and 4.3-2).

The remaining 30–40% of the air pollution in the FRAQMD area is a result of stationary sources that include agricultural operations, open burning of vegetative wastes, wood burning for residential heating, manufacturing industries, electric generation industries, diesel backup generators, retail gasoline and local bulk distribution facilities, auto body shops, dry cleaners, landfills, other human-made sources that emit air contaminants, and naturally occurring sources (including biological and geological sources, wildfires, and windblown dust) (FRAQMD 2010).

Criteria air pollutant emission sources in Yuba County include stationary, area, and mobile sources. According to the 2005 emissions inventory for the County, the majority of ROG and NO_x emissions are attributable to mobile sources, while areawide sources are the greatest contributor of PM emissions (ARB 2009b).

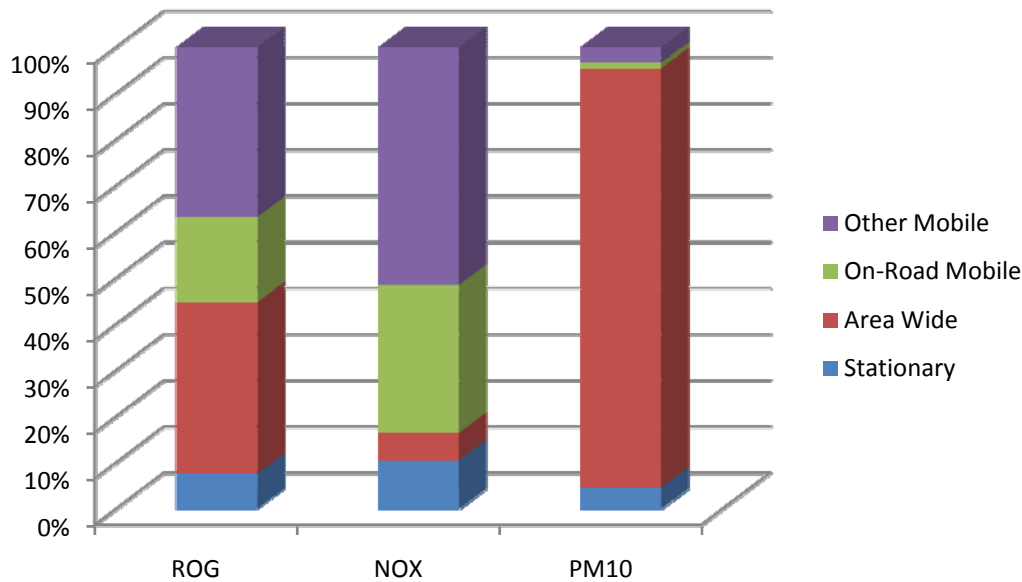


Source: ARB 2007

Yuba County 2005 Emissions Inventory— Relative Contributions from Emission Sources²

Exhibit 4.3-1

² On-road sources include automobiles, motorcycles, and trucks; other mobile sources (off-road mobile sources) include small off-road engines and equipment, off-road recreational vehicles, farm and construction equipment, forklifts, locomotives, commercial marine vessels, and marine pleasure craft. Stationary sources include nonmobile sources such as power plants, refineries, and manufacturing facilities. Areawide sources of pollution are those where the emissions are spread over a wide area, such as consumer products, fireplaces, road dust, and farming operations. Natural sources are emission sources that are not human made, which include biological and geological sources, wildfires, windblown dust, and biogenic emissions from plants and trees.



Source: ARB 2009b

**Yuba County 2009 Emissions Inventory—
Relative Contributions from Emission Sources**

Exhibit 4.3-2

STATIONARY SOURCES

Major stationary sources of air pollutant emissions within the County include industrial processes, fuel combustion from electric utilities and other processes, waste disposal, surface coating and cleaning, petroleum production, and other sources. As discussed previously, the local districts issue permits to various types of stationary sources, which must demonstrate implementation of BACT.

AREAWIDE SOURCES

Areawide sources of emissions include consumer products, application of architectural coatings, residential fuel combustion, farming operations, construction and demolition, road dust, fugitive dust, landscaping, fires, and other miscellaneous sources. Unpaved road dust is the largest contributor to particulate matter emissions within the County.

MOBILE SOURCES

On-road and other mobile sources are the largest contributors of ozone precursor emissions within the County. On-road sources consist of passenger vehicles, trucks, buses, and motorcycles, while off-road vehicles and other mobile sources comprise heavy-duty equipment, boats, aircraft associated with Beale Air Force Base and other county airports, trains, recreational vehicles, and farm equipment. Major roadways in Yuba County include State Routes 65, 70, 20, and 49, as well as county rural, urban, or regional arterial roadways.

EXISTING AIR QUALITY—TOXIC AIR CONTAMINANTS

According to the 2009 California Almanac of Emissions and Air Quality (ARB 2009a) the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being PM from diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances.

TAC Sources

Although diesel PM is emitted by diesel-fueled internal-combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, ARB has made preliminary concentration estimates based on a PM exposure method. This method uses ARB's PM₁₀ database for emissions inventories, monitoring data for ambient PM₁₀, and the results from several studies on chemical speciation to estimate concentrations of diesel PM. Of the TACs for which data are available in California, diesel PM, benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest existing ambient risks. Diesel PM poses the greatest health risk among these 10 TACs mentioned (ARB 2009a).

Area sources of TAC emissions in Yuba County include Beale Air Force Base (associated with jet fuel and ordinance). The remaining permitted sources within Yuba County are wood production, agricultural or are associated with aggregate and/or asphalt production. In addition, please refer to the existing *Yuba County General Plan's* land use diagram for areas currently designated as industrial (i.e., areas most likely to be stationary sources of emissions) (ARB 2009e).

TAC Exposure

TACs are considered in land use planning in association with sensitive land uses. Sensitive land uses or sensitive receptors are people or facilities that generally house people (e.g., schools, hospitals, residences, etc.) that may experience adverse effects from unhealthy concentrations of air pollutants. There are numerous types of these receptors throughout Yuba County, particularly concentrated near populated areas.

EXISTING AIR QUALITY—ODORS

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

The ability to detect odors varies considerably among the population and is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast food restaurant) may be perfectly acceptable to another. Unfamiliar odors are more easily detected than familiar odors and are more likely to cause complaints. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition occurs only with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the intensity of the odor weakens and eventually becomes so low that detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Sources of Odor

Odor sources in the county include dairies and other livestock operations, industry, wastewater treatment facilities, and other sources. Existing odor sources within Yuba County are six wastewater treatment plants and 20

sewage lift stations, the Ostrom Landfill and two transfer processing facilities, as well as four permitted composting facilities with two more planned. Inactive landfills may cause odors as well as active and within Yuba County there is one “closed” landfill and seven “closed” solid waste disposal sites. Another potential source for odors is Beale Air Force Base, from the various fuels used and ordnance.

4.3.4 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

METHODOLOGY

Regional and local emissions of criteria air pollutants and precursors, TACs, and odors throughout buildout of the 2030 General Plan were assessed in accordance with the methodologies described below.

Construction-related emissions of criteria air pollutants (e.g., PM₁₀) and ozone precursors (ROG and NO_x) were assessed in accordance with methodologies recommended by ARB and FRAQMD. Where quantification was required, emissions were modeled using the Urban Emissions (URBEMIS) 2007 Version 9.2.4 computer model. Model default parameters were assumed where project-specific data (e.g., construction equipment types and number requirements, and maximum daily acreage disturbed) were not available at the General Plan level.

Construction-related emissions were compared to applicable FRAQMD thresholds to determine significance.

Regional operational emissions of criteria air pollutants and precursors (e.g., mobile and area sources) were also quantified using the URBEMIS 2007 Version 9.2.4 computer model. Modeling was based on buildout assumptions in the 2030 General Plan and information about vehicle trip generation from the traffic analysis prepared to support the General Plan and EIR (see Section 4.2, “Transportation and Circulation,” in this DEIR).

Other air quality impacts (i.e., local emissions of CO, odors, and operation-related TACs) were assessed in accordance with methodologies recommended by ARB and FRAQMD.

THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis, the following thresholds of significance, as identified by the State CEQA Guidelines (Appendix G) and FRAQMD have been used to determine whether implementation of the 2030 General Plan would result in significant air quality impacts.

Based on Appendix G of the State CEQA Guidelines, an air quality impact is considered significant if the proposed project 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 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; or
- ▶ create objectionable odors affecting a substantial number of people.

As stated in Appendix G, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. Thus, according to FRAQMD, an air quality impact is considered significant if the proposed project would:

- ▶ Violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations (25 pounds per day [lb/day] of ROG or NO_x, or 80 lb/day of PM₁₀).

IMPACT ANALYSIS

IMPACT 4.3-1 Generation of Long-Term Operational, Regional Emissions of Criteria Air Pollutants and Precursors and Consistency with Air Quality Planning Efforts. *Future development in Yuba County would generate emissions of criteria air pollutants (PM₁₀ and PM_{2.5}) and ozone precursors, both of which affect regional air quality. The 2030 General Plan would accommodate additional population and employment development, which would lead to operational (mobile-source and area-source) emissions that are not accounted for in the current applicable air quality plan and would exceed FRAQMD thresholds. This impact is considered potentially significant.*

Air pollutant emissions associated with the 2030 General Plan were calculated based on assumptions regarding full development of General Plan land uses within the Valley Growth Boundary and Rural Communities. The analysis takes into account vehicle travel data provided in the traffic analysis prepared to support the 2030 General Plan and this EIR, and area-source emissions from proposed land uses.

ARB's motor vehicle emissions model (EMFAC 2007) factors, as contained in the URBEMIS 2007 (Version 9.2.4) computer model, were used along with travel demand impacts from the traffic analysis prepared for this project (see Section 4.2, "Transportation and Circulation," of this DEIR). This transportation analysis was used to calculate emissions in units of lb/day for future (2030) conditions upon buildout of the 2030 General Plan relative to existing (on-the-ground) land uses (i.e., the baseline). The net change in daily air pollutant emissions is shown in Table 4.3-3.

Emissions of PM₁₀ and ozone precursors (ROG and NO_x) associated with land use change under the 2030 General Plan are treated as new to the region. This is a conservative [worst-case] assumption because many "new vehicle trips" may actually be moved from one part of the region to another partly as a result of the 2030 General Plan.

Area- and Mobile-Source Emissions

Regional area- and mobile-source emissions of ROG, NO_x, PM₁₀, and PM_{2.5} were modeled using the URBEMIS 2007 Version 9.2.4 computer program, which is designed to estimate emissions for land use development projects. URBEMIS allows land use data entries that include project location specifics and trip generation rates. URBEMIS accounts for area-source emissions from the use of natural gas, wood stoves, fireplaces, landscape maintenance equipment, and consumer products; and mobile-source emissions associated with vehicle trip generation. Regional area- and mobile-source emissions were modeled based on proposed land use types and sizes (see Chapter 3.0, "Project Description"), the increase in trip generation from the traffic analysis prepared for this project (see Section 4.13, "Traffic and Transportation"), and default settings and parameters attributable to construction period and location.

Modeled operational emissions are summarized in Table 4.3-3 for 2030 buildout conditions. As shown in Table 4.3-3, operational activities associated with the 2030 General Plan could result in annual unmitigated emissions of up to 6,613 lb/day of ROG, 4,830 lb/day of NO_x, 15,253 lb/day of PM₁₀, and 2,879 lb/day of PM_{2.5}.

Based on the modeling conducted, operational activities would result in emissions of ROG, NO_x, and PM₁₀ that exceed FRAQMD's applicable thresholds of 25, 25, and 80 lb/day, respectively. Thus, operational emissions of these ozone precursors and PM could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations.

**Table 4.3-3
Summary of Modeled Operational Emissions of Criteria Air Pollutants and Precursors—
New Development Accommodated under 2030 General Plan Full Buildout**

Source	Emissions (lb/day) ¹			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Area Sources^{2,4}	2,699	621	1.17	1.16
Mobile Sources³	3,914	4,210	15,252	2,878
Total GPU Daily Emissions	6,613	4,830	15,253	2,879
FRAQMD Significance Threshold	25 lb/day	25 lb/day	80 lb/day	-

Notes: FRAQMD = Feather River Air Quality Management District; GP = General Plan; GPU = General Plan Update; lb/day = pounds per day; NO_x = oxides of nitrogen; PM₁₀ = particulate matter less than or equal to 10 microns in diameter; PM_{2.5} = particulate matter less than or equal to 2.5 microns in diameter; ROG = reactive organic gases

¹ Emissions modeled using the URBEMIS 2007 (Version 9.2.4) computer model, for analysis year 2030 based on trip generation rates obtained from the analysis prepared for this project and proposed land uses identified in Chapter 3, "Project Description," and Section 4.13, "Transportation and Circulation," of this EIR.

² For this estimate, it was assumed that no wood-burning appliances would be installed.

³ Trip generation rates were obtained from the traffic analysis for the respective land uses.

Refer to Appendix B for detailed assumptions and modeling output files.

Source: Data modeled by AECOM in 2010.

Stationary-Source Emissions

The 2030 General Plan could accommodate stationary sources of pollutants that would be required to obtain permits to operate, in compliance with FRAQMD rules. These sources could include, but are not limited to, diesel-engine or gas turbine generators for emergency power generation; central-heating boilers for commercial, industrial, or large residential buildings; process equipment for light-industrial uses; kitchen equipment at restaurants and schools; service-station equipment; and dry-cleaning equipment. The permit process would assure that these sources would be equipped with the required emission controls, and that individually, these sources would not cause a significant environmental impact. There is no available methodology to reliably estimate these emissions at this time, since no such uses are specifically proposed under the 2030 General Plan. Nonetheless, the emissions from these sources would be additive to the estimated area-source and mobile-source emissions described above.

Relevant Policies and Actions of the 2030 General Plan

- ▶ **Policy CD1.1:** Urban and suburban development in the unincorporated County not related to agriculture, mining, or some natural or cultural resource-oriented purpose is prohibited in valley areas outside the Valley Growth Boundary.
- ▶ **Policy CD1.3:** General Plan land use designation/s will not be assigned within the Planning Reserve area unless the County determines that these lands are needed to fulfill either the County's regional housing needs allocation or accommodate job-generating developments needed to achieve the County's jobs-housing goals.
- ▶ **Policy CD1.4:** Projects will not be approved within the Planning Reserve area until the County assigns the appropriate General Plan land use designation/s and approves zoning and development standards consistent with the Community Development Element.

- ▶ **Policy CD2.1:** The County will encourage infill development and redevelopment of vacant and underutilized properties within existing unincorporated communities.
- ▶ **Policy CD2.2:** The County will support specific plans, redevelopment plans, corridor plans, and community plans that promote infill development and reinvestment.
- ▶ **Policy CD2.3:** The County will support reinvestment in Linda and Olivehurst that increases local shopping, job, and housing opportunities.
- ▶ **Policy CD2.4:** The County will maintain flexible development standards and impact fees that promote infill development and promote lot consolidation for redevelopment, where necessary.
- ▶ **Policy CD2.5:** The County will direct public spending on infrastructure to infill areas in order to induce reinvestment, remove blight, and reduce poverty.
- ▶ **Policy CD2.6:** The County will support public/private partnerships that encourage infill development consistent with the General Plan.
- ▶ **Policy CD2.7:** The County will actively promote vacant industrial sites in the Linda and Olivehurst areas for employment development.
- ▶ **Policy CD3.1:** Commercial and industrial developments shall be located, buffered, or otherwise designed to avoid significant noise and air quality impacts.
- ▶ **Policy CD3.2:** New residential projects near railroads and highways should provide multi-use open space buffers designed to avoid adverse air quality, noise, vibration, light, and glare issues.
- ▶ **Policy CD3.3:** New residential development shall provide multi-use buffers and site plans designed to avoid pressure to convert long-term planned agriculture, mining, and forestry lands to urban development.
- ▶ **Policy CD3.4:** The County will use performance-based standards in mixed-use areas to ensure important aspects of compatibility (air, noise, vibration, heavy truck traffic, light, glare) are addressed without impeding mixed-use development.
- ▶ **Policy CD3.5:** Prior to approval, new developments are required to demonstrate consistency with established standards for setbacks from landfills, airports, sewage treatment plants, and other similar uses, as applicable.
- ▶ **Action CD3.1: Compatibility Review and Conditioning of Projects and Plans.** The County will review projects against policies in this General Plan and analysis in the General Plan Environmental Impact Report (EIR) to reduce noise and air quality impacts. The County Zoning Ordinance and development standards should identify design and performance standards for noise, light, glare, air pollution, and other relevant issues. The County will use the General Plan to determine the adequacy of proposed buffering between residential land uses, highways, railroads, airports, industries, mining operations, agricultural operations, and other potentially incompatible uses. The County will condition projects, as appropriate, to provide consistency with this General Plan and the General Plan EIR. The County will balance its goals for infill and mixed-use development with policies and standards for noise, vibration, light and glare, and other issues of compatibility.
 - Related Goals: Goal CD3, Goal NR11, Goal HS5, Goal HS9, Goal HS10, Goal HS11
 - Agency/Department: Community Development and Services Agency
 - Funding Source: General Fund; applicant funding for project-specific work
 - Time Frame: Ongoing

- ▶ **Action CD3.2: Open Space Buffers along State Highways and Railroads.** The County will seek funding for design and implementation of air quality, noise, and visual buffers along regional transportation routes. The County will coordinate with regional transportation agencies and drainage providers to find opportunities to use these same buffer areas for natural drainage conveyance, multi-modal transportation routes, visual buffering, community gardens, and for other useful public purposes.
 - Related Goals : Goal CD2, Goal CD3, Goal CD 19, Goal NR11, Goal HS5, Goal HS10, Goal HS11
 - Agency/Department: Community Development and Services Agency
 - Funding Source: General Fund; federal and state funds; other funding, as appropriate.
 - Time Frame: Ongoing, as funding opportunities arise.

- ▶ **Policy CD4.1:** Employment and Commercial Centers shall be developed in coordination with local transit provider/s to ensure proper placement and design of transit stops and accommodate public transit for both employees and patrons.
- ▶ **Policy CD4.2:** Employment and Commercial Centers shall be designed to provide convenient and safe pedestrian and bicycle access from surrounding developed and planned neighborhoods.
- ▶ **Policy CD4.3:** In Commercial and Employment Centers, developments should place buildings close to the frontage street and emphasize the public realm by providing plazas, wide sidewalks, spaces for entertainment and other community events, outdoor seating and gathering areas, and other similar uses and activities.
- ▶ **Policy CD4.4:** Commercial projects of more than 20 acres in land area shall use public streets or small private streets to break up proposed development areas into blocks.
- ▶ **Policy CD4.5:** New commercial projects in Commercial Centers and other locations shall distribute proposed parking around the project site and not concentrate parking exclusively between the front building façade and the primary abutting street.
- ▶ **Policy CD4.6:** The County will encourage development of workforce housing around Employment Centers that is ancillary to, and supportive of employment-generating land uses.
- ▶ **Policy CD5.1:** Valley Neighborhoods should provide for most daily and weekly destinations, including a mix of commercial retail and services, schools, parks, and other civic uses.
- ▶ **Policy CD5.2:** Valley Neighborhoods should provide compact development patterns that conserve land and place homes in close proximity to destinations.
- ▶ **Policy CD5.3:** Valley residential development in existing and planned Valley Neighborhoods should provide for the full range of housing types and densities.
- ▶ **Policy CD5.4:** New developments within the Valley Growth Boundary shall provide a highly connected travel network that supports all local travel modes.
- ▶ **Policy CD5.5:** The County’s development standards will allow narrow lots, narrow driveways, alleyway access, zero lot line housing, and other compact housing configurations in Valley Neighborhoods.
- ▶ **Action CD5.1: Update Zoning Ordinance.** Following the General Plan adoption, the County will review and revise the Zoning Ordinance, consistent with the updated General Plan. As a part of the revisions, the County will ensure the updated Zoning Ordinance accommodates compact growth patterns, consistent with the General Plan, while continuing to provide for the public health and safety. The County will consider provisions in the Zoning Ordinance that focus more on building form, function, and placement and the relationship of buildings to the public realm (streets, plazas, public parks, etc.) and less on regulating specific

land uses. To ensure land use compatibility while also encouraging a mix of land uses, the County will base performance standards in the Zoning Ordinance on General Plan policies for such topics as noise, vibration, light, glare, air pollution, and traffic. Such performance standards could be used to ensure compatibility in situations where nonresidential uses are located close to residential uses.

- Related Goals : Goal CD2, Goal CD3, Goal CD4, Goal CD6, Goal CD7, Goal CD8, Goal CD19, Goal HS5, Goal HS10, Goal HS11, Goal NR11
- Agency/Department: Community Development and Services Agency
- Funding Source: General Fund; federal and state funds, as available
- Time Frame: Update Zoning Ordinance by 2013

- ▶ **Policy CD6.1:** Valley Neighborhoods shall contain one or more Neighborhood Center, where medium- and higher-density residences, neighborhood commercial, and public services are focused.
- ▶ **Policy CD6.2:** Neighborhood Center activities, retail, and services should serve roughly 3,000 to 5,000 existing or planned residents in the surrounding neighborhood.
- ▶ **Policy CD6.3:** Neighborhood centers should be developed on approximately 4 to 15 acres of land and sized according to the needs of the surrounding neighborhood.
- ▶ **Policy CD6.4:** Higher-density residential development and services in Neighborhood Centers should transition to less intense development at the edges of existing and planned Valley Neighborhoods.
- ▶ **Policy CD6.5:** Neighborhood Centers will have a pedestrian-friendly mix of uses and a palette of housing types to meet the needs of the County's diverse households.
- ▶ **Policy CD6.6:** Neighborhood Centers shall be located and designed to provide convenient and safe bicycle, pedestrian, and transit access to and from surrounding neighborhoods.
- ▶ **Policy CD7.1:** During this General Plan time horizon, the County will pursue funding for reinvestment along Olivehurst Avenue, McGowan Parkway, North Beale Road, Lindhurst Avenue, and other appropriate corridors.
- ▶ **Policy CD7.3:** The County will encourage – through entitlement, streamlining, flexibility in development standards, fee structures, and other incentives – infill development in vacant or underutilized sections of Mixed-Use Corridors.
- ▶ **Policy CD7.4:** Developments in Mixed-Use Corridors should have pedestrian-friendly property frontages with buildings built close to the street frontage.
- ▶ **Policy CD7.5:** Development in Mixed-Use Corridors should be designed so that building façades, street trees, and other landscaping are more visually prominent compared to surface parking lots and commercial signage.
- ▶ **Policy CD7.6:** The County will promote public plazas, outdoor dining, awnings, large windows, and other elements along property frontages that enhance pedestrian attractiveness and activity in Mixed-Use Corridors.
- ▶ **Policy CD7.7:** The County will seek funding to add drainage, bicycle, pedestrian, and transit facilities along Mixed-Use Corridors.

- ▶ **Policy CD7.8:** The County will seek funding to add street trees along Mixed-Use Corridors, particularly in areas that would shade sidewalks, parking areas, transit stops, and any public gathering places.
- ▶ **Action CD7.1: Corridor Planning.** The County will seek funding to support corridor planning efforts for McGowan Parkway, Olivehurst Avenue, Lindhurst Avenue, North Beale Road, the northern section of Feather River Boulevard, and surrounding areas. The County may also identify other Mixed-Use Corridors to address during buildout of the General Plan. Mixed-Use Corridor Plans would be designed to (Exhibit Community Development-10): Guide mixed-use, infill development consistent with the applicable land use designation/s and zoning district/s; Identify multimodal transportation improvements to support development; Describe public infrastructure and facilities needed to encourage private investment; and Identify incentives and streamlining that would induce private investment in these areas. The Plans would be structured to provide a mix and density of development with adequate transportation facilities such that walking, bicycling, or taking transit is viable for daily needs of the residents of surrounding neighborhoods. The County will pursue grant funding and regional partnerships to revitalize its Mixed-Use Corridors. The County will plan and fund infrastructure designed to support increased density and intensity around future transit stops, near planned bicycle/pedestrian facilities, and in other targeted reinvestment areas.
 - Related Goals: Goal CD4, Goal CD7, Goal CD8, Goal CD10, Goal CD11, Goal CD15, Goal CD19, Goal NR7, Goal HS5, Goal HS11
 - Agency/Department: Community Development and Services Agency
 - Funding Source: General Fund; federal and state funds
 - Time Frame: Ongoing, according to funding opportunities as they arise.
- ▶ **Policy CD8.1:** New developments should be designed to provide direct and convenient access to nearby parks, trails, commercial and public services, and transit stops.
- ▶ **Policy CD8.2:** Valley Neighborhood developments shall provide relatively short block lengths and continuity of streets in order to facilitate convenient pedestrian, bicycle, and vehicle movement (Exhibit Community Development-11).
- ▶ **Policy CD8.3:** New cul-de-sacs are allowed within the Valley Neighborhoods only where they would not create a barrier for pedestrian and bicycle access or circulation between homes and destinations. Cul-de-sacs may be allowed around the edges neighborhoods, in areas adjacent to ongoing agricultural operations, in areas adjacent to existing large volume roadways, or where connectivity is limited by existing physical conditions.
- ▶ **Policy CD8.4:** New buildings in Valley Neighborhoods should, in general, be oriented toward, and placed close to frontage streets.
- ▶ **Policy CD8.5:** New developments shall be designed so that parking areas and garages are not the dominant visual element of site frontage.
- ▶ **Policy CD8.6:** County development standards will allow shallow residential front-yard setbacks to provide a human scale to development and allow for larger, private back yards.
- ▶ **Policy CD8.7:** The County’s development standards will allow alley-loaded garages.
- ▶ **Policy CD8.8:** New developments shall use porches, stoops, windows, and other elements that provide “eyes on the street” onto yards, entrances, streets, and other public and semi-public places.

- ▶ **Policy CD8.9:** Fences and walls are discouraged along public travelways where they would present substantial barriers to casual surveillance or multi-modal travel.
- ▶ **Policy CD8.10:** New developments in the valley shall provide streets lined with trees selected and located to provide a shade canopy at maturity.
- ▶ **Policy CD8.11:** Multi-family housing developments should be well connected to the surrounding neighborhood. Parking areas should be sized and broken up to avoid creating barriers to pedestrian and bicycle circulation.
- ▶ **Policy CD9.6:** The County will support planning for Rural Centers in foothill and mountain portions of the County that would provide a variety of activities and services needed or anticipated to be needed by the local population (Exhibit Community Development-13).
- ▶ **Policy CD9.9:** Rural Communities can provide clusters of housing constructed at the upper end of allowable density ranges near Rural Centers, but in general should provide larger lots at the edges of the community that transition to the surrounding open space areas.
- ▶ **Policy CD9.11:** Rural Centers should be focused on County collector and arterial roads and highways, and particularly at “crossroads” locations central to the surrounding rural communities.
- ▶ **Policy CD9.12:** Rural Centers should be located along existing or planned future transit routes.
- ▶ **Policy CD10.1:** The County will encourage development that improves the balance between local jobs and housing, including new commercial, industrial, and other development that generates net revenues for the County and produces local jobs.
- ▶ **Policy CD10.3:** The County will phase growth with efficient infrastructure planning to keep fees as low as possible and coordinate with service providers to ensure the savings of this efficient infrastructure planning is passed on to occupants of employment-generating developments.
- ▶ **Policy CD10.5:** The County will support community and specific planning efforts following General Plan adoption that identify employment-generating uses and the housing and infrastructure that is needed to support the local workforce.
- ▶ **Policy CD10.6:** The County should encourage residential development that is priced, sized, and located to serve the needs of local employers and workers and discourage overproduction of housing that is sized, priced, and located for residents working outside Yuba County.
- ▶ **Policy CD10.7:** Large residential development projects shall be phased or timed to occur concurrently with development projects that will provide employment in the County.
- ▶ **Action CD10.2: Land Use Monitoring.** The County will monitor progress toward the jobs-housing goal and, as necessary, amend the General Plan, Zoning Ordinance, Specific Plans, Community Plans, and other relevant plans and codes, as appropriate. Any amendments shall address imbalances between job and population growth, and may include revisions to allowable land uses or development standards, financial/regulatory incentives to accelerate the development of job-generating uses, and other actions.
 - Related Goals: Goal CD1, Goal CD4, Goal CD10
 - Agency/Department: Community Development and Services Agency and Economic Development Coordinator.

- Funding Source: General Fund
 - Time Frame: Report on jobs-housing balance at least once per year to the Board of Supervisors.
- ▶ **Policy CD11.6:** The County will encourage rail spur development and increased use of local railroad routes for freight and passenger service, as well as conversion to trails or roadways, where appropriate.
 - ▶ **Policy CD13.1:** Growth shall be phased from developed areas and existing infrastructure outward in a logical, efficient manner, and in a way that avoids premature conversion of agricultural lands, changes in rural character, and unnecessary loss of other land-based natural resources.
 - ▶ **Policy CD13.2:** The County will not induce growth by providing services or infrastructure in areas not planned for development.
 - ▶ **Policy CD13.3:** Unincorporated County development between present and 2030 shall be focused within the Valley Growth Boundary and Rural Communities.
 - ▶ **Policy CD13.5:** For areas designated Planning Reserve, allowable land use will be regulated according to the underlying land use designation unless 4 of 5 members of the Board of Supervisors approve the following findings: The subject project or plan proposed within the Planning Reserve Area promotes the goals and is consistent with the polices of the Community Development Element, Natural Resources Element, Housing Element, and Public Health & Safety Element of the General Plan; and The subject project or plan proposed within the Planning Reserve Area will directly provide substantial basic (exporting) employment development potential; or The subject project or plan proposed within the Planning Reserve Area will construct water, wastewater, and drainage infrastructure that will serve future employment development, with the understanding that project applicants are repaid on a fair-share basis for the cost of providing off-site infrastructure to employment centers.
 - ▶ **Policy CD14.5:** The County will coordinate its land use planning with local school districts to ensure adequate educational facilities with safe and convenient pedestrian and bicycle access to and from surrounding neighborhoods.
 - ▶ **Policy CD14.6:** The County will support joint-use facilities, shared maintenance, and projects with other local service agencies and districts that are coordinated to provide enhanced public levels of service and/or long-term cost savings.
 - ▶ **Policy CD14.7:** The County will support and encourage joint-use parks for school and community use, joint-use parks for recreational and drainage conveyance and detention, joint-use libraries for school and community use, and other appropriate joint-use facilities.
 - ▶ **Policy CD15.4:** The County's impact fees will be revised to consider cost efficiencies associated with compact, mixed-use, and infill development.
 - ▶ **Policy CD15.5:** New developments should incorporate water conservation techniques to reduce water demand, including the use of reclaimed water for landscaping and irrigation.
 - ▶ **Policy CD15.9:** The County will require that new developments include safe and convenient access to nearby schools and work with the local school districts to ensure safe access.
 - ▶ **Policy CD15.10:** The County will locate its own administrative facilities in downtown areas, along Mixed-Use corridors, or in Neighborhood Centers, whenever possible.

- ▶ **Action CD15.1: Revise Impact Fees.** The County will have prepared a Nexus Fee Study following the 2030 General Plan update to support revised development impact fees. One focus of this updated effort would be to ensure that compact development that makes efficient use of land has lower fees, where this approach to development is shown to have lower costs. The County will consider basing fees on an equivalent dwelling unit (EDU) basis, a per-capita basis, or per-acre basis, depending on the type of fee. The per-EDU, per-capita, or per-acre approach would be considered rather than presenting fees on a flat-rate, per unit basis. Different types of dwelling units have different demands for services and different associated costs. The County will also consider reduced fees for infill development that has access to existing infrastructure with adequate capacity to serve that development.
 - Related Goals: Goal CD1, Goal CD2, Goal CD5, Goal CD6, Goal CD7, Goal CD8, Goal CD11, Goal CD12, Goal CD13, Goal CD14, Goal CD15, Goal CD16, Goal CD19, Goal NR12, Goal HS9
 - Agency/Department: Community Development and Services Agency
 - Funding Source: General Fund
 - Time Frame: Nexus Fee Study and revised fees by 2014.

- ▶ **Policy CD16.1:** The County will maintain roadway levels of service that recognize differences between urban and rural environments and consider other social, economic, and environmental policies of the County.

- ▶ **Policy CD16.5:** Where a new development would exceed the County’s Level of Service policies, applicants shall first consider feasible revisions to the proposed development that would increase connectivity, enhance bicycle/pedestrian/transit access, provide additional travel demand management measures, and/or provide other revisions that would help to meet LOS standards by reducing vehicle miles traveled on roads exceeding the target LOS, prior to consideration of adding capacity to roadways and intersections.

- ▶ **Policy CD16.10:** The County will not use traffic Level of Service policies to analyze and mitigate CEQA impacts of new developments, but instead will use its Level of Service policies to assess fair-share funding of transportation facilities necessary to serve new projects.

- ▶ **Policy CD16.11:** The County will analyze and mitigate transportation impacts in CEQA documents according to their relative increase in vehicular travel demand.

- ▶ **Action CD16.2: Traffic Impact Fees.** Following adoption of the General Plan, the County will revise its Countywide Traffic Mitigation Fee Program based on a nexus study meeting state law requirements. The County will continue to require specific plans to identify funding for transportation facilities needed to serve development within each subject specific plan. The countywide program would focus on improvements needed to serve development within the unincorporated County not within a specific plan. The County’s impact fee programs will be sensitive to elements of proposed projects that reduce their per-unit and per-employee trip generation rates. Centrally located projects, projects with high densities and employment intensities, located in areas with good transit service, located in mixed-use environments, for example, would be expected to have lower per-unit fees. Commercial traffic impact fees should take into account whether the commercial project is designed to attract drivers or oriented toward providing services to neighborhoods.
 - Related Goals: Goal CD2, Goal CD7, Goal CD8, Goal CD13, Goal HS5
 - Agency/Department: Public Works Department
 - Funding Source: Capital improvement funds
 - Time Frame: Update Countywide Traffic Mitigation Fee Program by 2014.

- ▶ **Policy CD17.1:** New developments shall be designed to facilitate safe and convenient travel by pedestrians, bicyclists, transit users, and drivers.
- ▶ **Policy CD17.2:** The County will coordinate approval of projects and plans with local transit providers to ensure that transit service is provided for work, shopping, school, and other types of trips within the Valley Growth Boundary.
- ▶ **Policy CD17.3:** The County will coordinate with Yuba College to provide housing and commercial services within walking and bicycling distance of the Linda campus and plan for convenient and safe pedestrian, bicycle, and transit options for students attending Yuba College.
- ▶ **Policy CD17.4:** The County will provide incentives to businesses that sponsor transit routes or create their own travel demand management programs, which may include, but are not limited, to streamlined permitting, and reduction of parking requirements.
- ▶ **Policy CD17.5:** The County will review and condition large employment generating projects, defined as new projects that could accommodate more than 50 full-time equivalent employees, according to the provisions of a County Travel Demand Management Ordinance.
- ▶ **Policy CD17.6:** New developments and specific plans shall analyze and mitigate related to increased travel demand, as feasible and consistent with County General Plan policy.
- ▶ **Action CD17.1: Travel Demand Management Ordinance.** The County will develop a Travel Demand Management ordinance that requires large employers to provide incentives for employees to commute via transit, bicycle, on foot, or by carpool, rather than the single-occupant vehicular commute.
 - Related Goals: Goal CD4, Goal HS5, Goal CD16, Goal CD17, Goal CD19
 - Agency/Department: Public Works
 - Funding Source: General Fund
 - Time Frame: Ongoing
- ▶ **Policy CD18.8:** The County will coordinate with Caltrans to implement context-sensitive improvements to state facilities that are keyed to local multi-modal transportation needs.
- ▶ **Policy CD19.1:** The County will promote mixed-use, infill development and redevelopment in order to reduce dependence on the private automobile.
- ▶ **Policy CD19.2:** New developments and specific plans with a buildout population greater than 2,000 dwelling units shall designate Neighborhood Centers, consistent with the policies of the General Plan.
- ▶ **Policy CD19.3:** New developments and specific plans shall be phased or timed to occur concurrently with development that will provide employment in the County.
- ▶ **Policy CD19.4:** New developments in the Valley Growth Boundary shall provide focused nodes of population and employment density around transit stops, planned in coordination with Yuba-Sutter Transit, with a target of 9 units per acre of residential development, 20 employees per acre for nonresidential development, or 20 or more persons plus employees per acre for mixed-use development within ¼ mile of existing and planned transit stops.
- ▶ **Policy CD19.5:** The County will plan its investments and condition new developments to provide pedestrian, bicycle, and transit facilities designed to provide multi-modal connections within neighborhoods, within unincorporated communities, and between communities and cities in the County.

- ▶ **Policy CD19.6:** New developments shall include the construction or pro-rata funding of transportation infrastructure that includes a connected and integrated system of bicycle and pedestrian facilities.
- ▶ **Policy CD19.7:** New development shall accommodate safe and frequent crosswalks along roadways, with more frequent crossings in areas expected to have higher pedestrian traffic.
- ▶ **Policy CD19.8:** New bridge construction and substantial improvements to existing bridges within the Valley Growth Boundary and along designated bike routes in rural areas should be designed to accommodate the needs of bicyclists and pedestrians.
- ▶ **Policy CD19.9:** The County's improvement standards and street classification system will be designed to accommodate the full range of locally available travel modes.
- ▶ **Policy CD19.10:** The County will minimize intersection dimensions and turning radii, as appropriate, to preserve pedestrian safety and comfort, while also accommodating vehicular movements.
- ▶ **Policy CD19.11:** The County will seek funding for and, as feasible, install traffic-calming measures, such as planted medians, landscaped planter strips, landscaped traffic circles, and other designs in areas with excessive or high-speed traffic, as appropriate. The County will not support street closures, half closures, or other measures that limit connectivity as a way to calm traffic.
- ▶ **Policy CD19.12:** Secure bicycle parking shall be provided at or near public buildings, business districts, parks, playgrounds, shopping centers, schools, transit terminals, bus stops, and other bicycle traffic generators.
- ▶ **Policy CD19.13:** New developments shall provide attractive streetscapes with street trees and sidewalks, planting strips, transit shelters, benches, and pedestrian-scale lighting, as required by County standards.
- ▶ **Policy CD19.14:** The County will collaborate with Yuba-Sutter Transit and other regional transit providers to ensure transit stops are accommodated in the context of new development and redevelopment.
- ▶ **Policy CD19.15:** The County will encourage local businesses to collaborate with transit providers to develop transit incentive programs for local employees.
- ▶ **Policy CD19.16:** The County will plan for and condition projects to provide for park-and-ride facilities in coordination with Yuba-Sutter Transit.
- ▶ **Policy CD19.17:** The County supports paratransit and other forms of transit service for those unable to use conventional transit service.
- ▶ **Policy CD19.18:** The County will support any feasible opportunities to provide intra-county and inter-county passenger rail service for Yuba County residents and businesses.
- ▶ **Policy CD19.19:** The County supports expansion of AMTRAK passenger service and transit, bicycle, and pedestrian-friendly development around rail and transit stations.
- ▶ **Policy CD19.20:** The County will support programs to encourage and facilitate County employees' use of pedestrian, bicycle, and transit facilities to reach the workplace.
- ▶ **Action CD19.1: Pedestrian and Bikeway Master Planning.** The County will collaborate with other agencies during buildout of the General Plan to maintain pedestrian/bicycle master plans designed to meet growth needs. The master plan updates should be designed to improve bicycle and pedestrian connections between each city in the County, cities in adjacent counties, and each unincorporated community.

Bicycle/pedestrian master planning efforts should be coordinated with local irrigation districts, special districts, and public agencies with easements and rights-of-way, the railroad, other property owners, and other agencies and interested parties to acquire and/or use existing easements and rights-of-way for development of off-street pedestrian and bicycle pathways. Master plans will focus on improving links between neighborhoods and important destinations, such as schools, shops, commercial services, public services, and recreational opportunities.

- Related Goals: Goal CD15, Goal CD16, Goal CD17, Goal CD18, Goal CD19
- Agency/Department: Community Development and Services Agency
- Funding Source: Grant funding; regional funding
- Time Frame: Adopt Yuba-Sutter Bikeways Master Plan by 2013

- ▶ **Action CD19.2: Revise Development Code & Improvement Standards.** Following adoption of the 2030 General Plan, the County will revise its development code and improvement standards, where necessary, to encourage a high level of pedestrian, bicycle, and transit-friendliness in new development. In general, the County will consider revisions to its codes and standards to reduce road widths, reduce the amount of paved areas of roadways and parking lots, reduce pedestrian crossing distances, and reduce curb radii at intersections, in consideration of pedestrian and bicycle comfort and safety, while also considering turning templates needed for service and emergency vehicles. The County will consider revisions to its codes and standards that require wider sidewalks in areas where higher pedestrian and bicycle activity would be anticipated.

- Related Goals: Goal CD2, Goal CD8, Goal CD13, Goal CD15, Goal CD19, Goal CD 21, Goal HS3, Goal HS5, Goal HS8, Goal HS11, Goal NR7
- Agency/Department: Community Development and Services Agency
- Funding Source: General Fund; grant funding
- Time Frame: Revise zoning, development codes, and improvement standards by 2013

- ▶ **Action CD19.3: Transit Planning & Facilities Expansion.** During buildout of the General Plan, the County will proactively pursue funding for transit designed to meet the needs of Yuba County children, seniors, persons with disabilities, low-income, and all transit-dependent persons. The County will pursue air quality mitigation efforts that fund transit in coordination with Feather River Air Quality Management District and other interested agencies and nonprofits. The County will plan for, and implement expansion of transit service, as funding is available. Transit projects will be included in the County’s capital improvements planning, as appropriate. The County will examine the need for intermodal transit transfer facilities as the transportation system expands. The County will proactively coordinate with Yuba-Sutter Transit on grant funding opportunities to fund transit expansion, consistent with the General Plan, with a focus on transit in areas with at least 20 persons plus employees per acre.

- Related Goals: Goal CD13, Goal CD15, Goal CD16, Goal CD17, Goal CD18, Goal CD19, Goal HS5, Goal HS11
- Agency/Department: Community Development and Services Agency
- Funding Source: Grant funding
- Time Frame: As funding is available

- ▶ **Policy CD20.1:** New developments shall be designed to discourage concentration of traffic at a few intersections. Multiple points of access shall be provided whenever feasible.

- ▶ **Policy CD20.2:** New developments in the Valley Growth Boundary shall arrange roads in an interconnected block pattern, so that local pedestrian, bicycle, and automobile traffic do not have to use Arterials to circulate within the neighborhood.
- ▶ **Policy CD20.3:** The maximum average block length in new subdivisions approved in the Valley Growth Boundary should be approximately 450 feet. Smaller block sizes should be used around Neighborhood Centers, Community Centers, and Employment Centers.
- ▶ **Policy CD20.4:** New developments shall connect with adjacent roadways and stubbed roads and shall provide frequent stubbed roadways in coordination with future planned development areas.
- ▶ **Policy CD20.5:** Plans and projects shall connect to adjacent planned development areas and adjacent roadways at a minimum of 600-foot intervals. This minimum interval does not apply to development areas that are adjacent to existing or planned future limited-access highways, freeways, or expressways.
- ▶ **Policy CD20.6:** The County discourages the use of sound walls within neighborhoods. Traffic dispersal on a finely connected network of smaller roadways and other planning and site design solutions should be used instead of sound walls to address noise issues, to the greatest extent feasible.
- ▶ **Policy CD20.7:** Since gated residential areas discourage connectivity, the County will only allow such developments if multi-modal connectivity and emergency access to and from surrounding areas will not be significantly impaired. The County will not allow gates unless emergency access can be provided consistent with the standards of the relevant fire district.
- ▶ **Policy CD20.8:** The maximum allowable length of a cul-de-sac within the Valley Growth Boundary is 400 feet unless an exception is approved by the Community Development Director in consultation with local emergency service providers.
- ▶ **Policy CD20.9:** Destination land uses in new developments shall be located and designed so that people may conveniently reach these destinations by foot, bicycle, car, or bus.
- ▶ **Policy CD20.10:** The County will seek frequent street and trail connections between new residential developments and established Valley Neighborhoods.
- ▶ **Policy CD20.11:** Speed bumps, which can inhibit connectivity and emergency access, are discouraged as a method of traffic calming.
- ▶ **Policy CD21.1:** New development projects should be designed to minimize the amount of on-site land required to meet parking, internal circulation, and delivery/loading needs.
- ▶ **Policy CD21.2:** New developments shall break up any proposed surface parking with landscaping and provide pedestrian routes from parking areas to building entrances.
- ▶ **Policy CD21.3:** Land uses with different parking needs that peak at different times of the day shall be encouraged to maximize opportunities to share parking.
- ▶ **Policy CD21.4:** In Rural Communities and the Valley Growth Boundary, parking areas for nonresidential uses should generally be focused to the side or rear of the facility being served.
- ▶ **Policy CD21.5:** New developments shall plant at least one tree for every four parking spaces or shall demonstrate adequate planting to provide at least 50 percent shading of parking areas at maturity.

- ▶ **Policy CD21.6:** The County’s parking standards will be reduced or eliminated for infill and affordable housing projects in consideration of shared parking, on-street parking, and reduced travel demand attributable to these types of projects.
- ▶ **Policy CD21.7:** The County will consider adopting parking maximums in areas where high pedestrian and bicycle activity is expected and in areas around transit stops.
- ▶ **Action CD21.1: Revise Development Code & Improvement Standards.** Following adoption of the 2030 General Plan, the County will revise its development code and improvement standards. The County will consider reduced surface parking in areas where pedestrians and bicyclists are concentrated and where transit service is planned. The County will consider strategies to optimize parking supply through shared parking; use of on-street parking to meet demand of nearby properties; and other strategies. The County will consider establishing parking maximums, as well as minimums, as part of the development code and improvement standard revisions.
 - Related Goals: Goal CD2, Goal CD7, Goal CD8, Goal CD19, Goal CD21, Goal NR11, Goal HS3, Goal HS5
 - Agency/Department: Community Development and Services Agency
 - Funding Source: General Fund; grant funding
 - Time Frame: Revise zoning and development codes by 2013, revise improvement standards by 2014.
- ▶ **Policy NR1.5:** New developments shall provide for open space corridors consistent with the County’s Parks Master Plan, and as needed to provide naturalized drainage and bike/pedestrian connections to nearby neighborhoods and destinations.
- ▶ **Policy NR1.8:** Local parks shall be located central to the neighborhood they serve and designed to encourage pedestrian and bicycle access.
- ▶ **Policy NR1.13:** The County will incorporate trails along canals, transmission lines, and other easements and rights-of-way, including trail development atop levees, so long as flood protection facilities are not adversely affected.
- ▶ **Policy NR1.14:** The County will communicate with neighboring counties and cities to explore connections with Yuba County’s planned regional trail system.
- ▶ **Policy NR1.15:** Recreational facilities and open space shall be designed to use recycled materials and green building techniques, minimize surface runoff, reduce water demand, provide habitat for native species, and reduce the need for ongoing maintenance, as feasible.
- ▶ **Policy NR2.1:** The County will support urban greening projects that are designed to: Improve air and water quality; Protect natural resources; Increase the attractiveness of affordable housing and existing developed areas; Promote public health and the development of a healthy community; Increase access to safe areas for physical activity; Improve access to healthy, local food sources; Improve and use existing infrastructure systems and other community resources; Promote public health; Reduce greenhouse gas emissions; and Adapt to future climate conditions.
- ▶ **Policy NR2.2:** The County will seek funding for urban greening projects to be developed in underserved areas of Linda and Olivehurst, such as tree planting and maintenance, natural drainage systems improvements,

ecological restoration, park development, renewable energy development and energy conservation projects, trail development, community gardens, and other appropriate project types.

- ▶ **Policy NR2.3:** Urban greening projects shall be designed to improve access to recreational spaces for existing residents and improve existing developed areas of the County.
- ▶ **Policy NR2.4:** Urban greening projects can also be designed to integrate open spaces in existing developed areas with open spaces designed to connect with planned development areas.
- ▶ **Policy NR2.5:** The County will coordinate with local and regional agencies on the identification of potential urban greening projects.
- ▶ **Policy NR2.6:** The County will invite local service agencies, residents, property owners, and other organizations and individuals to contribute ideas for local urban greening projects.
- ▶ **Action NR2.1: Urban Greening Projects.** During this General Plan time horizon, the County will identify and seek funding for urban greening projects that provide for a range of benefits, such as: Reducing greenhouse gas emissions; Decreasing air and water pollution; Reducing the consumption of natural resources and energy; Increasing the reliability of local water supplies, and/or Increasing adaptability to climate change. The County’s urban greening projects will be designed to promote infill development and social equity, protect environmental resources, including agricultural lands, and encourage efficient development patterns. The County will coordinate with local school districts, local utility providers, cities, and other local and regional agencies, where appropriate, for Urban Greening Projects of mutual benefit. Urban greening projects will be identified that improve air and water quality, increase the attractiveness and availability of affordable housing, improve infrastructure systems or their function, and promote public health.
 - Related Goals: Goal NR1, Goal NR2, Goal CD8, Goal CD11, Goal CD12, Goal CD19
 - Agency/Department: Community Development and Services Agency
 - Funding Source: Grant funding, as available
 - Time Frame: Throughout General Plan implementation, as funding is available.
- ▶ **Policy NR4.8:** The County will support carbon offset programs within Yuba County’s forests, according to established protocols, and will support local carbon sequestration programs as an important aspect of local and regional greenhouse gas reduction requirements.
- ▶ **Action NR4.1: Carbon Sequestration Programs.** The County will proactively coordinate with local and regional agencies to investigate the feasibility of setting up a carbon offset program. The County will coordinate with the U.S. Forest Service, Bureau of Land Management, Yuba County Water Agency and water districts, and private timber companies and nonprofits to encourage local development of state-certified carbon sequestration projects. The County should encourage local application of regional greenhouse gas (GHG) offset fees, if feasible. If the County implements a GHG mitigation program tied to its GHG policies, local GHG fees collected for projects that do not achieve GHG efficiency policies on a per-capita, per-employee, or per-service population basis should be able to mitigate impacts using local, verified, GHG offset programs, if feasible.
 - Related Goals: Goal HS5, Goal NR4
 - Agency/Department: Community Development and Services Agency
 - Funding Source: Mitigation fees, grant funding, other available funding sources
 - Time Frame: Implement program, if feasible, by 2020.
- ▶ **Policy NR7.1:** New developments shall address energy conservation in landscaping methods, materials, and design.

- ▶ **Policy NR7.2:** New buildings shall meet state standards for energy efficiency and should provide for renewable energy development and use, to the greatest extent feasible.
- ▶ **Policy NR7.3:** New developments should be designed to take advantage of passive or natural summer cooling and winter solar access.
- ▶ **Policy NR7.4:** New developments should provide street and lot orientation and lot dimensions that facilitate the use of solar energy.
- ▶ **Policy NR7.5:** New developments within the Valley Growth Boundary should orient the majority of buildings so that the longer axis of the building, also known as the ridge line, is oriented east-to-west, in order to maximize the potential for passive solar heating in the winter and to minimize heat gain from the afternoon summer sun.
- ▶ **Policy NR7.6:** New developments should consider energy conservation in building-site orientation and construction, with articulated windows, roof overhangs, appropriate insulation materials and techniques, and other architectural features that improve passive interior climate control.
- ▶ **Policy NR7.7:** Shade trees or other appropriate plantings should be used in new developments to protect buildings from unwanted solar gain in summer months. Using deciduous trees on the southern side of structures is encouraged to allow cooling in the summer and solar gain in winter. Short front setbacks are encouraged to allow shade trees planted in the public right-of-way to provide summertime shading.
- ▶ **Policy NR7.8:** New buildings should emphasize passive and natural lighting systems in architectural design to conserve electricity.
- ▶ **Policy NR7.9:** New developments proposing parking lots shall incorporate shade trees or shade structures to provide a minimum of 50 percent shading (at maturity, where trees are used).
- ▶ **Policy NR7.10:** The County will seek regional, state, and federal funding for energy efficiency improvements in existing buildings and the public realm.
- ▶ **Policy NR7.11:** The County and Yuba County Water Agency should explore opportunities related to future access to hydroelectric power, energy provision, strategic use of local energy resources for employment development, and other programs that have dual environmental-economic benefits.
- ▶ **Policy NR7.12:** The County will encourage financing programs designed to facilitate the installation of renewable energy systems, including those that establish a benefit district and allow property owners to repay over the long term through a special assessment on the property tax bill.
- ▶ **Action NR7.13: Energy Efficiency Retrofits in Buildings and the Public Realm.** The County will proactively track and apply for regional, state, and federal funding to be used for energy efficiency improvements and renewable energy systems installation in existing buildings and the public realm (public rights-of-way, etc.). The County will seek funding for energy efficient systems, energy-efficient appliances, insulation, energy-efficient doors and windows, and other improvements. The County will also consider the feasibility of using fees or actions required to meet County greenhouse gas efficiency policies on a fair-share basis to fund energy efficiency improvements and renewable energy systems in existing developed buildings and the public realm.
 - Related Goals: Goal NR2, Goal NR7, Goal CD15, Goal HS5
 - Agency/Department: Administrative Services

- Funding Source: Grant funding, low-interest loans, impact fees, General Fund, and other appropriate funding sources
 - Time Frame: Ongoing, as funding is available
- ▶ **Policy NR12.4:** The County will encourage the use of recycled water for outdoor irrigation, toilet flushing, fire hydrants; commercial and industrial processes, carwashes, concrete batching, laundromats; dust control; parks, golf courses, and other landscaped areas, and other appropriate water-intensive uses.
 - ▶ **Policy NR12.5:** New developments shall use climate appropriate landscaping in parks and open space, landscaping within new rights of way, yards, and other appropriate spaces, to the maximum extent feasible.
 - ▶ **Policy NR12.6:** New developments shall include water conservation technologies such as low-flow toilets, efficient clothes washers, and efficient water-using industrial equipment, in accordance with state law.
 - ▶ **Policy HS3.17:** New developments shall limit construction of new impervious surfaces, such as parking lots, travelways, vehicle waiting areas, and vehicle loading areas to the minimum amount needed to implement the subject project.
 - ▶ **Policy HS5.1:** The County will guide land use change, direct investments, and apply its fees and programs to encourage more GHG-efficient development patterns.
 - ▶ **Policy HS5.3:** The County’s regulations, investments, and fee programs should be structured to reduce net greenhouse gas emissions for new development in the unincorporated County consistent with the County’s per-capita or per service population greenhouse gas efficiency policy.
 - ▶ **Policy HS5.4:** Since transportation is the largest sector contributing to GHG emissions both locally and at the statewide level, the County will prioritize land use/transportation projects that manage travel demand by increasing housing/employment density, placing homes in closer proximity with destinations, increasing accessibility to transit, or otherwise decreasing vehicle miles traveled (per household, per capita, and/ or per employee).
 - ▶ **Policy HS5.5:** The County will apply an efficiency-based standard (per-capita, per-employee) for urban land uses, such as homes, retail, office, and other uses where the location and density is very important to the level of greenhouse gas generation.
 - ▶ **Policy HS5.8:** The County will work collaboratively with state agencies and public/private utility providers charged with regulating building efficiency, mobile-source emissions controls, energy sources and uses, and other components of GHG emissions to create the opportunity for more GHG-efficient local development.
 - ▶ **Policy HS5.9:** The County will actively pursue funding for GHG-efficient transportation systems and other needed infrastructure, building and public realm energy efficiency upgrades, renewable energy production, land use-transportation modeling, and other projects to reduce local greenhouse gas emissions.
 - ▶ **Policy HS5.12:** Rural Community Plans should address strategies to diversify the local land use mix to meet more resident needs within each community, increase energy efficiency, shorten trips, and encourage non-vehicular travel, as feasible, to increase greenhouse gas efficiency.
 - ▶ **Action HS5.1:** Greenhouse Gas Reduction Plan. The County will prepare and adopt a plan to reduce greenhouse gas (GHG) emissions. *[Please see the 2030 General Plan Public Health & Safety Element, under separate cover, for additional information on the County’s Greenhouse Gas Reduction Plan.]*

- Related Goals: Goal HS1, Goal HS2, Goal HS3, Goal HS5, Goal HS11, Goal CD2, Goal CD4, Goal CD5, Goal CD6, Goal CD7, Goal CD8, Goal CD10, Goal CD15, Goal NR2, Goal NR7
- Agency/Department: Community Development and Services Agency
- Funding Source: General fund, grant funding
- Time Frame: Adopt by 2012, monitoring reports and needed revisions in coordination with Housing Element updates and updates to the Regional Transportation Plan.

► **Action HS5.2: Assist Farmers to Reduce Greenhouse Gas Emissions.** The County will meet with local agricultural groups, such as the Yuba-Sutter Farm Bureau, UC Davis Extension representatives, local organic farming groups, and other public and private groups representing farmers to discuss the best available programs to reduce agricultural greenhouse gas (GHG) emissions. Methods to be explored may include, but are not limited to reduction strategies from changes in crop management, animal wastes, energy use, crop residue burning, livestock management, soil management, solid waste management, fertilizers, and off-road equipment. The County will seek funding, through carbon offsets or other sources, to provide incentives that encourage farmers to participate in consensus GHG reduction programs for agriculture.

- Related Goals: Goal HS5, Goal NR3
- Agency/Department: Community Development and Services Agency and Agricultural Commissioner, in collaboration with local farming groups.
- Funding Source: General fund, grant funding, carbon offset fees
- Time Frame: Ongoing, as funding is available.

Conclusion

Future development accommodated under the 2030 General Plan would generate emissions of ozone precursors, PM₁₀, and PM_{2.5}, primarily through the use of motor vehicles. The 2030 General Plan contains numerous goals, policies, and actions intended to reduce VMT and resulting air pollution, as well as air pollution from other sources. The County includes a wide range of policies designed to provide compact, mixed-use development and infill development. These types of development patterns place homes closer to destinations, reducing vehicle miles traveled and accommodating non-auto trips. The General Plan also aligns public infrastructure and facilities planning and fee structures with the County’s approach for future development patterns. The County’s policies also are designed to improve energy and water conservation and therefore reduce emissions associated with energy generation and water delivery. Policies and actions in the General Plan designed to address greenhouse gas emissions would also have the benefit of reducing criteria air pollutant emissions, in many cases. In summary, the General Plan addresses air quality in a comprehensive manner, with relevant policies and actions in each element. However, even with implementation of these goals, policies, and actions, operational emissions could exceed applicable emissions thresholds. Therefore, this impact would be **significant**.

Mitigation Measures

Implementation of the various 2030 General Plan goals, policies, and actions outlined above would reduce air pollutant emissions that affect both Yuba County and the region. However, the 2030 General Plan would still result in operational emissions in excess of threshold assumptions used by FRAQMD for relevant clean air plans.

Buildout of the 2030 General Plan would continue to conflict with current air quality planning efforts. Each significant source of air pollution from General Plan buildout was considered in drafting General Plan policies

and actions. There are no additional policies, actions, or mitigation measures that are available to reduce long-term impacts associated with operational air pollutants within unincorporated Yuba County. This impact is considered **significant and unavoidable**.

IMPACT 4.3-2 **Generation of Short-Term Construction-Related Emissions of Criteria Air Pollutants and Precursors.**
*Emissions of Criteria Air Pollutants and precursors resulting from construction activities accommodated under the 2030 General Plan would exceed FRAQMD's significance thresholds of 25 lb/day for ROG and NO_x and 80 lb/day for PM₁₀. Policies in the 2030 General Plan would support compliance with FRAQMD-recommended standard construction mitigation practices. This would appreciably reduce construction-generated air pollutant emissions from buildout of the 2030 General Plan. However, due to the large amount of total development proposed over the buildout period, construction-generated emissions of criteria air pollutants and precursors is considered substantial, and could violate an ambient air quality standard, contribute substantially to an existing or predicted air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations. As a result, this impact is considered **potentially significant**.*

Construction-related emissions are described as short-term or temporary in duration. Despite the finite period of construction related emissions for any particular project, these emissions have the potential to represent a significant air quality impact. General Plan buildout is dependent on economic, demographic, and other factors, many of which are not knowable at this time. However, individual projects brought forward under the 2030 General Plan would be reviewed by the County to ensure that development occurs in a logical manner consistent with policies in the General Plan, and that additional environmental review is conducted under CEQA, as needed.

Construction-related activities would result in emissions of criteria air pollutants (e.g., PM₁₀) and precursors (e.g., ROG and NO_x) from site preparation (e.g., excavation, grading, and clearing); exhaust from off-road equipment, material delivery vehicles, and worker commute vehicles; vehicle travel on paved and unpaved roads; and other miscellaneous activities (e.g., building construction, asphalt paving, application of architectural coatings, and trenching for utility installation).

Emissions of ozone precursors are associated primarily with exhaust from off-road construction equipment. Worker commute trips and other construction-related activities also contribute to short-term increases in ozone precursors. Emissions of fugitive PM dust (e.g., PM₁₀ and PM_{2.5}) are primarily associated with ground disturbing activities during site preparation (e.g., grading and excavation) and vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and VMT on- and off-site.

Exhaust emissions from diesel equipment and worker commute trips also contribute to short-term increases in PM₁₀ emissions, but to a much lesser extent (see Table 4.3-4). Construction-related activities would result primarily in project-generated emissions of fugitive PM₁₀ dust from site preparation (e.g., excavation, grading, and clearing).

Construction-related emissions of ROG, NO_x, PM₁₀, and PM_{2.5} were modeled using the URBEMIS 2007 Version 9.2.4 computer program. URBEMIS is designed to model construction emissions for development projects and allows for the input of project-specific information. Detailed phasing and construction information (e.g., construction equipment type and number requirements, maximum daily acreage disturbed, number of workers, hours of operation) is not possible to determine at the General Plan level.

Modeling was performed assuming a 20-year planning horizon (2011 through the General Plan time horizon of 2030). It is assumed that 1/20 or roughly 5% of the proposed uses would be constructed during any given year over the 20-year time frame covered by the 2030 General Plan. This would represent approximately 3,500 acres of development per year over 20 years. Modeling was conducted for the year 2011 to represent worst-case conditions. If construction would not occur until future years, emission factors associated with off-road construction equipment would be lower due to the regulatory trend of more stringent emissions standards for

engines. As older models of equipment are replaced by newer models with cleaner engines, fleetwide emission factors would decline.

Table 4.3-4 Summary of Modeled Construction-Related Emissions of Criteria Air Pollutants and Precursors— Buildout of the 2030 General Plan in the Worst-Case Year (2011)				
	Emissions (lb/day)			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Construction Activities Associated with 2030 General Plan ^{1,2}				
Grading	5	41	380	82
Building Construction	32	125	8	6
Asphalt Paving	28	78	4	4
Architectural Coatings	2,110	2	0.02	0.10
Trenching	4	33	2	2
Total Unmitigated Worst-case Daily Emissions (GPU)	2,178	279	394	92
FRAQMD Significance Threshold	25	25	80	-
Total Mitigated Daily Emissions (GPU)³	1,634	210	79	n/a
Notes: lb/day = pounds per day; NO _x = oxides of nitrogen; PM ₁₀ = particulate matter less than or equal to 10 microns in diameter; PM _{2.5} = particulate matter less than or equal to 2.5 microns in diameter ROG = reactive organic gases; FRAQMD = Feather River Air Quality Management District				
Emissions totals may not sum exactly due to rounding.				
¹ No emissions were modeled for demolition activities. Existing land uses to be demolished are unknown at this time.				
² It was assumed that, on average, 3,495.95 acres would be developed annually and a maximum of 19 acres/day would be actively disturbed associated with construction of the 2030 General Plan.				
⁴ Implementation of FRAQMD-recommended construction mitigation measures was assumed to result in a 5%, 20% and 75% reduction in ROG, NO _x , and PM ₁₀ , respectively.				
Refer to Appendix B for detailed input parameters and modeling results.				
Source: Modeling performed by AECOM in 2010				

Table 4.3-4 summarizes the estimated construction-related emissions of criteria air pollutants and ozone precursors from site preparation (e.g., grading) and building construction activities that could be accommodated under buildout of the 2030 General Plan. Construction-related air quality impacts were determined by comparing these modeling results with applicable FRAQMD significance thresholds. Refer to Appendix B for detailed modeling input parameters and results.

As summarized in Table 4.3-4, construction-related activities associated with the buildout of the reasonable worst-case year (2011) would result in annual unmitigated emissions of approximately 2,178 lbs/day of ROG, 279 lbs/day of NO_x, 394 lbs/day of PM₁₀, and 92 lbs/day of PM_{2.5}. FRAQMD does not have a threshold for emissions of PM_{2.5}, which are listed for informational purposes only, and are a subset of PM₁₀.

Based on the modeling conducted, construction-related activities associated with buildout of the 2030 General Plan would result in emissions of ROG, NO_x, and PM₁₀ that exceed FRAQMD’s significance thresholds. Taken together, or individually, buildout of land uses designated under the proposed 2030 General Plan could result in construction-related emissions of criteria air pollutants and precursors that could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations. The 2030 General Plan includes policies designed to reduce construction-related impacts, as summarized below.

Relevant Policies and Actions of the 2030 General Plan

- ▶ **Policy CD5.5:** The County’s development standards will allow narrow lots, narrow driveways, alleyway access, zero lot line housing, and other compact housing configurations in Valley Neighborhoods.
- ▶ **Policy CD14.6:** The County will support joint-use facilities, shared maintenance, and projects with other local service agencies and districts that are coordinated to provide enhanced public levels of service and/or long-term cost savings.
- ▶ **Policy CD14.7:** The County will support and encourage joint-use parks for school and community use, joint-use parks for recreational and drainage conveyance and detention, joint-use libraries for school and community use, and other appropriate joint-use facilities.
- ▶ **Policy CD19.10:** The County will minimize intersection dimensions and turning radii, as appropriate, to preserve pedestrian safety and comfort, while also accommodating vehicular movements.
- ▶ **Policy CD21.3:** Land uses with different parking needs that peak at different times of the day should maximize opportunities to share parking, where feasible.
- ▶ **Policy CD21.3:** Land uses with different parking needs that peak at different times of the day shall be encouraged to maximize opportunities to share parking.
- ▶ **Policy CD21.6:** The County’s parking standards will be reduced or eliminated for infill and affordable housing projects in consideration of shared parking, on-street parking, and reduced travel demand attributable to these types of projects.
- ▶ **Policy CD21.7:** The County will consider adopting parking maximums in areas where high pedestrian and bicycle activity is expected and in areas around transit stops.
- ▶ **Action CD21.1: Revise Development Code & Improvement Standards.** Following adoption of the 2030 General Plan, the County will revise its development code and improvement standards. The County will consider reduced surface parking in areas where pedestrians and bicyclists are concentrated and where transit service is planned. The County will consider strategies to optimize parking supply through shared parking; use of on-street parking to meet demand of nearby properties; and other strategies. The County will consider establishing parking maximums, as well as minimums, as part of the development code and improvement standard revisions.
 - Related Goals: Goal CD2, Goal CD7, Goal CD8, Goal CD19, Goal CD21, Goal NR11, Goal HS3, Goal HS5
 - Agency/Department: Community Development and Services Agency
 - Funding Source: General Fund; grant funding
 - Time Frame: Revise zoning and development codes by 2013, revise improvement standards by 2014
- ▶ **Policy NR1.15** Recreational facilities and open space shall be designed to use recycled materials and green building techniques, minimize surface runoff, reduce water demand, provide habitat for native species, and reduce the need for ongoing maintenance, as feasible.
- ▶ **Policy NR7.1:** New developments shall address energy conservation in landscaping methods, materials, and design.

- ▶ **Policy NR7.2:** New buildings shall meet state standards for energy efficiency and should provide for renewable energy development and use, to the greatest extent feasible.
- ▶ **Policy HS3.17:** New developments shall limit construction of new impervious surfaces, such as parking lots, travelways, vehicle waiting areas, and vehicle loading areas to the minimum amount needed to implement the subject project.
- ▶ **Policy HS6.1:** New developments shall implement emission control measures recommended by the Feather River Air Quality Management District for construction, grading, excavation, and demolition, to the maximum extent feasible.

Conclusion

The General Plan provides policies intended to reduce construction related emissions. The General Plan includes policies that encourage joint-use of facilities, thereby reducing the amount of construction and land disturbance that would be required compared to a situation where each public facility was separately constructed. The General Plan also includes policies designed to reduce the amount of parking, vehicle access, and roadway construction, which would reduce both construction and operational emissions compared to the continued application of 1996 General Plan policies, which does not include this policy approach.

However, the incorporation of FRAQMD-recommended control measures cannot be analyzed in detail for the large and diverse set of projects that could be accommodated under the General Plan. It is possible that emission control measures would be applied for certain larger projects, but emissions would still exceed relevant significance thresholds. As a result, construction-related emissions of fugitive dust could violate an air quality standard, contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations.

Because of the large amount of development and potential for simultaneous construction of multiple sites, the nonattainment status, and modeled emissions that exceed applicable thresholds (Table 4.3-4), implementation of the 2030 General Plan could have **significant** construction-related impacts.

Mitigation Measures

FRAQMD standard mitigation typically would include fugitive dust reduction measures. Open burning of vegetative waste (natural plant growth wastes) or other burn materials (trash, demolition debris) would normally be prohibited. FRAQMD would normally regulate construction equipment exhaust emissions, fuels, and idling time. Instead of fuel-powered equipment, existing power sources (e.g., power poles) or clean fuel generators would be used wherever feasible. Implementation of FRAQMD would reduce short-term, construction-related emissions.

However, the County cannot demonstrate at this time that these measures would reduce impacts to a less-than-significant level. It is possible that construction-related emissions of criteria air pollutants and precursors could still exceed significance thresholds. Such emissions could violate or contribute substantially to an existing or projected air quality violation and/or expose sensitive receptors to substantial pollutant concentrations. The County's policies require compliance with standard mitigation measures recommended by the local air quality management district. Beyond this and other County policies and actions, there are no additional feasible mitigation measures available to address this significant impact. This impact is considered **significant and unavoidable**.

IMPACT 4.3-3 *Generation of Long-Term, Operational, Local Mobile-Source Emissions of CO. Local mobile-source emissions of CO would not be expected to substantially contribute to emissions concentrations that would exceed the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm. As a result, this impact would be less than significant.*

The concentration of CO is a direct function of motor vehicle activity, particularly during periods of peak travel demand, and of meteorological conditions. Under specific meteorological conditions, CO concentrations may reach unhealthy levels with respect to local sensitive land uses (e.g., residential areas, schools, and hospitals). The California Department of Transportation (Caltrans) has established preliminary screening criteria for long-term, local mobile-source emissions of CO. If these criteria are not violated with implementation of the 2030 General Plan, it is unlikely that such CO emissions would result in, or substantially contribute to emissions concentrations exceeding the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm. Caltrans' preliminary screening criteria for significance are as follows (Garza et al 1997):

- ▶ A traffic study for the project indicates that the peak-hour Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to an unacceptable LOS (typically LOS E or F, with A being best and F being worst); or,
- ▶ A traffic study indicates that the project will substantially worsen an already existing peak-hour LOS F on one or more streets or at one or more intersections in the project vicinity. "Substantially worsen" includes situations where delay would increase by 10 seconds or more when project-generated traffic is included.

According to the traffic analysis prepared for the 2030 General Plan (see Section 4.13, "Traffic and Transportation"), signalized roadway intersections could be reduced to LOS E or LOS F from LOS A–D under buildout (2030) conditions for both a.m. and p.m. peak hours.

Worst-Case Effects at a Roadway Intersection

The intersection of North Beale Road and Lindhurst Avenue is expected to be the most impacted of the intersections analyzed therefore it was chosen to be modeled. The intersection of Erle Road and Lindhurst Avenue would deteriorate from LOS D under existing conditions to LOS E during the P.M. peak hour under the 2030 General Plan scenario. In addition the intersection of North Beale Road and Lindhurst Avenue would deteriorate to LOS E during the P.M. peak hour under the 2030 General Plan scenario.

CO Modeling

Because local mobile-source CO impacts did not meet the screening-level criteria identified by Caltrans, CO concentrations were modeled using the California Line Source Dispersion Model with emission factors from the EMFAC 2007 computer model. Modeling was conducted in accordance with the University of California, Davis Transportation Project-Level Carbon Monoxide Protocol (Garza, et al. 1997). Background (ambient) CO concentrations were obtained from the ARB, and were identified as the highest concentrations recorded during the last three years at the monitoring station nearest the project site. However, it is expected that background CO concentrations in the year 2030 would be lower than those recorded during 2006, due to continuous improvement in CO emissions control technology over time, making this analysis conservative. According to the data summarized in Table 4.3-1, the 1- and 8-hour background CO concentrations for the year 2030 were estimated to be 3.1 ppm and 2.3 ppm, respectively.

The maximum project-generated 1- hour CO concentration from p.m. peak hour daily trips at the modeled intersection was calculated to be 2.2 ppm, and the 8-hour concentration was estimated at 1.5 ppm. Total 1-hour and 8-hour estimated CO concentrations associated with 2030 General Plan buildout conditions would be approximately 5.3 and 4.1 ppm, respectively.

North Beale Road and Lindhurst Avenue would be among the busiest intersections in the Yuba County. Other delayed intersections would be expected to have similar or lower CO concentrations at buildout of the 2030 General Plan. The proposed project would not be anticipated to result in or contribute to local CO concentrations that exceed the California 1-hour or 8-hour ambient air quality standards of 20 ppm or 9 ppm, respectively. As a result, the impact of long-term operational emissions of local CO associated with the 2030 General Plan is considered **less than significant**.

Mitigation Measures

No mitigation is required.

IMPACT Exposure of Sensitive Receptors to Emissions of Toxic Air Contaminants. *Implementation of the 2030*
4.3-4 *General Plan would reduce the potential for exposure of sensitive land uses to substantial concentrations of TACs. This impact is considered potentially significant.*

Emissions of TACs during project construction consistent with the 2030 General Plan (e.g., emissions from on-site heavy-duty diesel equipment) and from project operation under the 2030 General Plan (e.g., emissions from both on-site and off-site area, stationary, and mobile sources) are discussed and their resulting levels of TAC exposure of sensitive receptors are analyzed separately below.

Construction-Related Emissions

Construction-related activities would result in short-term emissions of diesel PM from the exhaust of off-road heavy-duty diesel equipment for site preparation (e.g., excavation, grading, and clearing); paving; application of architectural coatings; and other miscellaneous activities. Diesel PM was identified as a TAC by ARB in 1998. The potential cancer risk from the inhalation of diesel PM, as discussed below, outweighs the potential for all other health impacts (ARB 2003).

Emissions from construction equipment would be reduced over the period of buildout of the 2030 General Plan. This is important, in part, because existing regulations would have beneficial impacts related to TAC exposure over time. In January 2001, EPA promulgated a final rule to reduce emissions standards for heavy-duty diesel engines in 2007 and subsequent model years. These emissions standards represent a 90% reduction in NO_x emissions, 72% reduction of nonmethane hydrocarbon emissions, and 90% reduction of PM emissions in comparison to the emissions standards for the 2004 model year. In December 2004, ARB adopted a fourth phase of emission standards (Tier 4) in the Clean Air Non-road Diesel Rule that are nearly identical to those finalized by EPA on May 11, 2004. As such, engine manufacturers are now required to meet after-treatment-based exhaust standards for NO_x and PM starting in 2011 that are more than 90% lower than current levels, putting emissions from off-road engines virtually on par with those from on-road heavy-duty diesel engines.

TAC Exposure to Construction-Related Emissions

The dose to which receptors are exposed to TAC emission levels that exceed applicable standards is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time.

According to the California Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period (Salinas, pers. comm., 2004). A long exposure period is used for health risk assessments due to the exposure periods associated with health risk. Because the use of off-road heavy-duty diesel equipment would be temporary

and intermittent, and because of the highly dispersive properties of diesel PM (Zhu et al. 2002), construction-related TAC emissions are not anticipated to expose sensitive receptors to substantial concentrations of TACs.

Operational Emissions

Stationary Sources

The 2030 General Plan anticipates construction of a variety of industrial, commercial, and other land uses that could represent new stationary sources. Under general plans, it is not possible to list out each type of new stationary sources to describe TAC exposure for any given project or location within the unincorporated area without substantial speculation.

However, it is possible that projects developed under the 2030 General Plan would include stationary sources of TACs, such as dry-cleaning establishments, gasoline-dispensing facilities, and diesel-fueled backup generators. These types of stationary sources, in addition to any other stationary sources that may emit TACs, would be subject to FRAQMD rules and regulations.

Thus, as discussed above, FRAQMD would analyze such sources, using health risk assessments, where necessary, based on the source's potential to emit TACs. If it is determined that the sources would emit TACs in excess of FRAQMD's applicable significance threshold, MACT or BACT would be implemented to reduce emissions. If the implementation of MACT or BACT would not reduce the risk below the applicable threshold, FRAQMD would deny the required permit. As a result, given required compliance with applicable rules and regulations, operation of stationary sources would not result in the exposure of sensitive receptors to TACs at levels exceeding FRAQMD significance thresholds.

According to ARB, there are 19 major existing stationary sources of TACs in Yuba County (ARB 2010e). These stationary sources are permitted and regulated to prevent new land use compatibility conflicts. Therefore, the County does not anticipate compatibility related TAC impacts of existing or proposed land uses with major existing sources of TAC emissions.

Mobile Sources

Mobile sources of TACs would be associated primarily with the operation of on-road heavy-duty diesel trucks used for any on-site commercial/industrial activities (e.g., unloading/loading). According to the ARB guidance document *Air Quality and Land Use Handbook: A Community Health Perspective*, ARB recommends avoiding the siting of new commercial trucking facilities that accommodate more than 100 trucks per day, or 40 trucks equipped with transportation refrigeration units (TRUs), within 1,000 feet of sensitive receptors (e.g., residences) (ARB 2005). But, the ARB guidance document is advisory, not regulatory. See below for rail traffic discussion. Aircraft operations would also contribute TACs and this issue is addressed by 2030 General Plan policies and actions (see below).

Operational activities that require the use of diesel-fueled vehicles for extended periods, such as commercial trucking facilities or delivery/distribution areas, may generate diesel PM emissions that could expose sensitive receptors to diesel PM emissions. Although commercial and industrial uses that would be developed under the 2030 General Plan have not been specifically identified, it is likely that commercial uses developed under the General Plan would have tenants that would require large delivery and shipping trucks that use diesel fuel. The diesel exhaust PM emissions generated by these uses would be produced primarily at single locations on a regular basis (e.g., loading dock areas). Idling trucks, including TRUs, increase diesel PM levels at these locations. Occupants of nearby existing and proposed residences could be exposed to diesel exhaust PM emissions on a reoccurring basis.

ARB has adopted an idling restriction ATCM for large commercial diesel-powered vehicles, which became effective February 1, 2005. In accordance with this measure, affected vehicles are required to limit idling to no

longer than 5 minutes, under most circumstances. ARB is currently evaluating additional ATCMs intended to further reduce TACs associated with commercial operations, including a similar requirement to limit idling of smaller diesel-powered commercial vehicles. In addition, the 2030 General Plan contains goals, policies, and actions (see below) designed to minimize exposure of sensitive receptors to concentrations of TACs from mobile sources.

The 2030 General Plan includes a mix of land uses, including commercial, industrial, and residential uses. The ARB guidance document *Air Quality and Land Use Handbook: A Community Health Perspective* recommends avoiding the placement of new sensitive land uses (e.g., residences and schools) within 500 feet of major freeways (those with 100,000+ vehicles per day). There are no roadways in Yuba County with this level of traffic, either under existing or future buildout conditions.

Sensitive receptors would not be sited within 500 feet of a “major freeway,” using this definition, and risk associated with implementation of the 2030 General Plan would be compatible with ARB’s recommendations. In addition, the 2030 General Plan includes policies designed to further reduce this impact.

Rail Traffic Sources

There are two railroad lines that operate in Yuba County carrying both freight and Amtrak trains. Union Pacific Railroad (UPRR) operates both, the Valley Line and the UPRR/Burlington Northern Santa Fe (BNSF) line.

The Valley Line, located in western Yuba County, extends from where SR 70 crosses the Bear River to the north and crosses the Feather River into Sutter County and the UPRR/BNSF line extends from Wheatland adjacent to SR 65 north into Butte County. Today, the Valley Line operates approximately 19 daily train trips through Yuba County, which pass near Linda, and Olivehurst, and the Plumas Lake area. The UPRR/BNSF rail line operates approximately 48 daily train trips through Yuba County, which pass near Wheatland, Linda, and Olivehurst (Lund, pers. comm., 2007). Since diesel engines are used along the railroad corridors, there is the potential to expose sensitive receptors to substantial pollutant concentrations if new sensitive receptors locate in areas adjacent to railroad lines with substantial traffic and railroad traffic increases in the future.

For TAC emissions, this analysis evaluates the impact of operations along existing railroad lines relative to proposed sensitive receptors. While the California Air Resources Land Use Handbook provides guidance for exposure of sensitive receptors to large-volume roadways, the same quantitative guidance is not available for railroads as of the writing of this document. Therefore, this section describes impacts related to exposure of sensitive receptors to TACs by using conservative assumptions and methods to translate the guidance on high-volume roadways to railroad lines.

The number of daily freight and passenger trains passing through the County was determined using information from Amtrak and noise monitoring data. Freight trains are assumed to be a mix of Union Pacific Railroad and Burlington Northern Santa Fe Railroad. The average horsepower for a large line haul locomotive for UP engines is 4,000 and for BNSF engines is 4,256 (Sangkapichai 2008). The average horse power for Amtrak locomotives is assumed to be 3,000.

Heavy-duty trucks were used as a proxy emission source to represent railroad TAC emissions. Emissions from rail traffic were converted to heavy-duty truck volumes, which were then converted to typical roadway traffic for comparison with air district screening thresholds for high-volume roadways. The EPA Office of Transportation and Air Quality released “Emission Factors for Locomotives” in April of 2009 (EPA 2009a). The EPA locomotive emissions factors were developed in a manner that captures the national fleet percentages of the different tier engines. Future emissions factors are lower than current since, with existing regulations, a greater percentage of the fleet will be higher tier (cleaner) engines in the future. Based on the EPA locomotive emissions factors, line haul locomotives in 2011 produce 4.4 grams gallon of fuel consumed (g/gal) of PM10 and commuter locomotives for 2011 produce 4.5 g/gal of PM10 (EPA 2009a).

Emissions factors for trucks were calculated using the EMFAC 2007 computer model in units of grams of PM10 per truck category. Truck categories used in this analysis were Light Heavy Duty Trucks (T4) (LLHDT), Light Heavy Duty Trucks (T5) (LHDT), Medium Heavy Duty Trucks (MHDT), and Heavy Heavy Duty Trucks (HHDT) The percent representation of each truck type was calculated for the total vehicle fleet and for the truck-only fleet.

The emissions estimate for railroad traffic was then used to determine the number of trucks that would be required to produce the same emissions as the railroad traffic in the County. It would take approximately 2,383 daily heavy duty truck (HDT) trips to produce approximately the same amount of emissions as the railroad traffic within the County. This method determined that the rail line activity in the County would be equivalent to a road with approximately 56,393 vehicle trips per day.

Because of the absence of a quantified screening threshold for rail lines, the proposed rail activity was converted to heavy-duty truck trips as a surrogate emissions source. The ARB Land Use Handbook discusses land use recommendations for roadways with 100,000 vehicles per day.

With the calculations described above and in the “Methodology” section of this section used to convert rail traffic to the equivalent high-volume roadway traffic volumes, exposure to potential TAC emissions along the railroad is considered **less than significant** since it is below levels identified by ARB for land use and roadway compatibility.

In October 2004, ARB released a study that provided a health risk characterization and assessment of the diesel PM from locomotives at the J. R. Davis Rail Yard in Roseville, California (ARB 2004). The study indicated that locomotive-related activities at the rail yard would result in the exposure of sensitive receptors near the yard to a cancer risk level in excess of the applicable threshold. However, the rail lines in Yuba County are used specifically for passenger and freight service and experience extremely light daily rail traffic relative to the traffic occurring at the rail yard in Roseville. In addition, unlike the locomotives in Yuba County, the locomotives at the Roseville rail yard undergo engine testing, and they idle for extended periods of time, so emissions are higher and persist in one localized area for greater amounts of time. The rail yard study describes conditions that are unlike those associated with the rail line through Yuba County, which would not expose sensitive receptors to diesel PM concentrations that would result in a health risk in excess of the threshold.

Should additional railroad lines or spurs become developed in Yuba County, it is anticipated that these would be freight rail lines with similar characteristics of existing railroad lines. Although the General Plan allows a broad range of land uses, the County does not currently anticipate development of any railyards under the 2030 General Plan.

Relevant Policies and Actions of the 2030 General Plan

The 2030 General Plan includes policies and actions designed to reduce exposure of sensitive receptors to concentrations of TACs and help reduce future land use incompatibilities of sources that could potentially emit TACs and exposure of sensitive uses to harmful air pollutants:

- ▶ **Policy HS7.4:** New residential developments proposed in areas adjacent to ongoing agriculture shall provide buffers or other design features adequate to protect residents from harmful effects of agricultural chemical use.
- ▶ **Policy HS7.5:** The County will support compliance with state law regarding the location of school sites and sources of hazardous air emissions to ensure against endangerment of public health.
- ▶ **Policy CD3.1:** Commercial and industrial developments shall be located, buffered, or otherwise designed to avoid significant noise and air quality impacts.

- ▶ **Policy CD3.2:** New residential projects near railroads and highways should provide multi-use open space buffers designed to avoid adverse air quality, noise, vibration, light, and glare issues.
- ▶ **Policy CD3.3:** New residential development shall provide multi-use buffers and site plans designed to avoid pressure to convert long-term planned agriculture, mining, and forestry lands to urban development.
- ▶ **Policy CD3.4:** The County will use performance-based standards in mixed-use areas to ensure important aspects of compatibility (air, noise, vibration, heavy truck traffic, light, glare) are addressed without impeding mixed-use development.
- ▶ **Policy CD3.5:** Prior to approval, new developments are required to demonstrate consistency with established standards for setbacks from landfills, airports, sewage treatment plants, and other similar uses, as applicable.
- ▶ **Action CD3.1: Compatibility Review and Conditioning of Projects and Plans.** The County will review projects against policies in this General Plan and analysis in the General Plan Environmental Impact Report (EIR) to reduce noise and air quality impacts. The County Zoning Ordinance and development standards should identify design and performance standards for noise, light, glare, air pollution, and other relevant issues. The County will use the General Plan to determine the adequacy of proposed buffering between residential land uses, highways, railroads, airports, industries, mining operations, agricultural operations, and other potentially incompatible uses. The County will condition projects, as appropriate, to provide consistency with this General Plan and the General Plan EIR. The County will balance its goals for infill and mixed-use development with policies and standards for noise, vibration, light and glare, and other issues of compatibility.
 - Related Goals: Goal CD3, Goal NR11, Goal HS5, Goal HS10, Goal HS11
 - Agency/Department: Community Development and Services Agency
 - Funding Source: General Fund; applicant funding for project-specific work
 - Time Frame: Ongoing
- ▶ **Action CD3.2: Open Space Buffers along State Highways and Railroads.** The County will seek funding for design and implementation of air quality, noise, and visual buffers along regional transportation routes. The County will coordinate with regional transportation agencies and drainage providers to find opportunities to use these same buffer areas for natural drainage conveyance, multi-modal transportation routes, visual buffering, community gardens, and for other useful public purposes.
 - Related Goals: Goal CD2, Goal CD3, Goal CD 19, Goal NR11, Goal HS5, Goal HS10, Goal HS11
 - Agency/Department: Community Development and Services Agency
 - Funding Source: General Fund; federal and state funds; other funding, as appropriate.
 - Time Frame: Ongoing, as funding opportunities arise.

Conclusion

The General Plan includes policies that would require buffers between sensitive land uses and sources of TACs. The General Plan anticipates that the review and conditioning of projects, including buffering and other measures to promote compatibility of adjacent land uses, would be formalized through updates to County Codes. Despite the implementation of 2030 General Plan policies and actions, existing regulations, it is possible that sensitive land uses may be exposed to substantial TAC concentrations. Therefore, the impact is considered **significant**.

Mitigation Measures

There are no feasible mitigation measures available to address this impact beyond existing regulations and General Plan policies and programs. Therefore, the impact is considered **significant and unavoidable**.

IMPACT 4.3-5 Exposure of Sensitive Receptors to Emissions of Odors. *Implementation of the 2030 General Plan could result in the exposure of sensitive receptors to emissions of objectionable odors. As a result, this impact is considered **potentially significant**.*

The human response to odors is subjective, and sensitivity to odors varies greatly among the public. Minor sources of odors, such as exhaust from mobile sources, garbage collection areas, and charbroilers associated with commercial uses, are not typically associated with numerous odor complaints, but are known to have some temporary, less concentrated odorous emissions. Major and minor sources of odors are discussed separately below.

Major Sources of Odors

The following land use types are widely considered major sources of odors: wastewater treatment and pumping facilities, chemical manufacturing facilities, sanitary landfills, fiberglass manufacturing facilities, transfer stations, painting/coating operations (e.g., auto body shops), composting facilities, food processing facilities, confined animal facilities, asphalt batch plants, rendering plants, metal smelting plants, and coffee roasters. This list is meant not to be entirely inclusive, but to act as general guidance. Odor sources in Yuba County would be expected to include cooking and food processing facilities, agricultural uses, other industrial sources, wastewater treatment plants, and other sources. The County has anticipated the possibility that sensitive receptors may be exposed to sources of odor during implementation of the General Plan.

Relevant Policies and Actions of the 2030 General Plan

Though odor impacts are subjective, it is possible that land use conflicts between major odor sources and future sensitive receptors could occur. However, the 2030 General Plan includes policies designed to minimize land use incompatibilities, including those that may arise related to odors.

- ▶ **Policy HS7.4:** New residential developments proposed in areas adjacent to ongoing agriculture shall provide buffers or other design features adequate to protect residents from harmful effects of agricultural chemical use.
- ▶ **Policy CD3.1:** Commercial and industrial developments shall be located, buffered, or otherwise designed to avoid significant noise and air quality impacts.
- ▶ **Policy CD3.3:** New residential development shall provide multi-use buffers and site plans designed to avoid pressure to convert long-term planned agriculture, mining, and forestry lands to urban development.
- ▶ **Policy CD3.4:** The County will use performance-based standards in mixed-use areas to ensure important aspects of compatibility (air, noise, vibration, heavy truck traffic, light, glare) are addressed without impeding mixed-use development.
- ▶ **Policy CD3.5:** Prior to approval, new developments are required to demonstrate consistency with established standards for setbacks from landfills, airports, sewage treatment plants, and other similar uses, as applicable.
- ▶ **Policy CD3.10:** Odor controls should be installed on new and existing sources, as feasible, to reduce exposure for existing and future residents. This policy does not apply to existing agricultural or agricultural-related operations.
- ▶ **Policy CD3.11:** The deeds to all properties of proposed residential uses located near major odor sources, as defined by Feather River Air Quality Management District, shall include a disclosure clause advising buyers and tenants of the potential adverse odor impacts.

► **Action CD3.1: Compatibility Review and Conditioning of Projects and Plans.** The County will review projects against policies in this General Plan and analysis in the General Plan Environmental Impact Report (EIR) to reduce noise and air quality impacts. The County Zoning Ordinance and development standards should identify design and performance standards for noise, light, glare, air pollution, and other relevant issues. The County will use the General Plan to determine the adequacy of proposed buffering between residential land uses, highways, railroads, airports, industries, mining operations, agricultural operations, and other potentially incompatible uses. The County will condition projects, as appropriate, to provide consistency with this General Plan and the General Plan EIR. The County will balance its goals for infill and mixed-use development with policies and standards for noise, vibration, light and glare, and other issues of compatibility.

- Related Goals: Goal CD3, Goal NR11, Goal HS5, Goal HS10, Goal HS11
- Agency/Department: Community Development and Services Agency
- Funding Source: General Fund; applicant funding for project-specific work
- Time Frame: Ongoing

Minor Sources of Odors

Minor sources of odors associated with the 2030 General Plan would be associated with the construction of the proposed land uses. The predominant source of power for construction equipment is diesel engines. Exhaust odors from diesel engines, as well as emissions associated with asphalt paving and the application of architectural coatings may be considered offensive to some individuals. Similarly, diesel-fueled locomotives traveling along railroad lines, and diesel-fueled trucks traveling on local roadways would produce associated diesel exhaust fumes.

However, because odors associated with diesel fumes would be temporary and would disperse rapidly with distance from the source, construction-generated and mobile-source odors would not result in the frequent exposure of on-site receptors to objectionable odor emissions.

Relevant Policies and Actions of the 2030 General Plan

Though odor impacts are subjective, it is possible that land use conflicts between minor odor sources and future sensitive receptors could occur. However, the 2030 General Plan includes a policy and action designed to minimize land use incompatibilities, including those that may arise related to minor odors:

- **Policy CD3.2:** New residential projects near railroads and highways should provide multi-use open space buffers designed to avoid adverse air quality, noise, vibration, light, and glare issues.
- **Policy CD3.10:** Odor controls should be installed on new and existing sources, as feasible, to reduce exposure for existing and future residents. This policy does not apply to existing agricultural or agricultural-related operations.
- **Policy CD3.11:** The deeds to all properties of proposed residential uses located near major odor sources, as defined by Feather River Air Quality Management District, shall include a disclosure clause advising buyers and tenants of the potential adverse odor impacts.
- **Action CD3.2: Open Space Buffers along State Highways and Railroads.** The County will seek funding for design and implementation of air quality, noise, and visual buffers along regional transportation routes. The County will coordinate with regional transportation agencies and drainage providers to find opportunities to use these same buffer areas for natural drainage conveyance, multi-modal transportation routes, visual buffering, community gardens, and for other useful public purposes.

- Related Goals: Goal CD2, Goal CD3, Goal CD 19, Goal NR11, Goal HS5, Goal HS10, Goal HS11
- Agency/Department: Community Development and Services Agency
- Funding Source: General Fund; federal and state funds; other funding, as appropriate.
- Time Frame: Ongoing, as funding opportunities arise.

Conclusion

Minor sources of odors (e.g., construction equipment, highways, railroads) would not result in exposure of sensitive receptors (on- or off-site) to excessive project-generated odor sources, with implementation of the 2030 General Plan.

As noted elsewhere, the County will require agricultural buffers in new development to reduce adverse impacts and complaints associated with encroaching urban development. It is possible that agricultural processing facilities, dairies, feedlots, or other agriculture related uses that produce major odors would occur adjacent to the areas with existing or future sensitive uses. Exposure to wastewater treatment facilities could increase in the future. Future sensitive receptors could be exposed to excessive odors from existing or future land uses on a recurring basis. This impact is **significant**.

Mitigation Measures

Implementation of the above policies and action above would reduce the exposure of sensitive receptors to odorous emissions. But the County cannot guarantee that odor sources can be effectively reduced such that complaints will not occur occasionally in the future. Due to the subjective nature of odor, it is possible that future impacts related to major and minor sources could be considered significant. The County has included all available feasible mitigation as General Plan policy. This impact is considered **significant and unavoidable**.

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