4.3 AIR QUALITY

This chapter discusses air quality in Butte County and evaluates potential local and regional air quality impacts associated with General Plan 2030 and the Airport Land Use Compatibility Plan (ALUCP) override. This chapter is based on both quantitative and spatial analyses, and was prepared using information from the California Air Resources Board, US Environmental Protection Agency, and the Butte County Air Quality Management District. Traffic conditions were modeled by the project traffic engineers, Fehr & Peers, using the CT-EMFAC, EMFAC2007, and CALINE4 computer models. Greenhouse gases are discussed in Section 4.15, Greenhouse Gas Emissions.

A. Regulatory Setting

The federal Clean Air Act (CAA) governs air quality in the United States and California. Air quality in the State is also governed by more stringent regulations under the California CAA. At the federal level, the US Environmental Protection Agency (EPA) administers the CAA, while the California CAA is administered by the California Air Resources Board (CARB) at the State level and by the Butte County Air Quality Management District (BCAQMD) at the regional and local levels.

1. Federal Laws and Regulations

The EPA is responsible for enforcing the federal CAA, as well as establishing the National Ambient Air Quality Standards (NAAQS). The NAAQS, which are discussed further in Section A.4, are required under the 1970 federal CAA and subsequent amendments. The EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships and certain types of locomotives. The agency also has jurisdiction over emission sources outside State waters, which are waters beyond the outer continental shelf, and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by the CARB, as discussed in Section A.2.

2. State Laws and Regulations

In California, the CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for meeting the State requirements of the federal CAA, administering the California CAA, and establishing the California Ambient Air Quality Standards (CAAQS), which are discussed further in Section A.4. The California CAA, as amended in 1992, requires all air districts in the state to endeavor to achieve and maintain the CAAQS. The CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles.

CARB regulates mobile air pollution sources, such as motor vehicles, and is responsible for setting emission standards for vehicles sold in California and other sources, such as consumer products and certain off-road equipment. CARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county levels.

3. Local Laws and Regulations

As a local air district, the BCAQMD, along with CARB, is responsible for implementing NAAQS and CAAQS. The Butte County Association of Governments (BCAG) is coordinating with the BCAQMD to implement strategies for air quality improvement through the Regional Transportation Plan, which is discussed in more detail in Chapter 4.13 of this EIR, Transportation and Circulation. Because of the regional nature of ozone (O_3) in the Sacramento Valley, the BCAQMD is also coordinating efforts with the Sacramento Valley Air Basin Control Council's Technical Advisory Committee, the Sacramento Area Council of Governments, and the Sacramento Metropolitan Air Quality Management District.

4. Air Pollutants and Ambient Air Quality Standards[1]

The NAAQS were established by the federal CAA of 1970 (amended in 1977 and 1990) for six criteria pollutants. These criteria pollutants include carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), particulate matter with a diameter less than 10 microns (PM_{10}), sulfur dioxide (SO_2) and lead (Pb). Recently, fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) was added as a criteria pollutant. Air quality studies generally focus on five pollutants that are most commonly measured and regulated: CO, O_3, NO_2, SO_2, and suspended particulate matter (i.e. PM_{10} and $PM_{2.5}$).

Pollutants regulated under the California CAA are similar to those regulated under the federal CAA. In many cases, California standards are more stringent than the national ambient air quality standards. Federal and State air quality standards are shown in Table 4.3-1. Both the national and California ambient air quality standards have been adopted by the BCAQMD, as discussed in Section A.3.

a. Carbon Monoxide

CO, a colorless and odorless gas, interferes with the transfer of oxygen to the brain. It can cause dizziness and fatigue, and can impair central nervous system functions. CO is emitted almost exclusively from the incomplete combustion of fossil fuels. Automobile exhaust and residential wood burning in fireplaces and woodstoves emit most of the CO in Butte County. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. The highest CO concentrations in Butte County are typically recorded during the winter.

b. Ozone

Ground-level ozone, or O_3, is the principal component of smog. O_3 is not directly emitted into the atmosphere, but instead forms through a photo-

[1] US Environmental Protection Agency, June 29, 2009, *What are the Six Criteria Pollutants?* Available at http://www.epa.gov/air/urbanair/, accessed on September 1, 2009.

TABLE 4.3-1 **STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS**

Pollutant	Averaging Time	State Standards	Federal Standards	
			Primary[a]	Secondary[b]
Ozone	8-hour	0.070 ppm[c] (137μg/m^3)[d]	0.075 ppm (147μg/m^3)	Same as primary
	1-hour	0.09 ppm (180 μg/m^3)	—[e]	Same as primary
Carbon monoxide	8-hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	None
	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—
Nitrogen dioxide	Annual	0.030 ppm (57μg/m^3)	0.053 ppm (100 μg/m^3)	Same as primary
	1-hour	0.18 ppm (339 μg/m^3)	—	Same as primary
Sulfur dioxide	Annual	—	0.03 ppm (80 μg/m^3)	—
	24-hour	0.04 ppm (105 μg/m^3)	0.14 ppm (365 μg/m^3)	—
	3-hour	—	—	0.5 ppm (1,300 μg/m^3)
	1-hour	0.25 ppm (655 μg/m^3)	—	—
PM_{10}	Annual	20 μg/m^3 (arithmetic mean)	—[f]	Same as primary
	24-hour	50 μg/m^3	150 μg/m^3	Same as primary
$PM_{2.5}$	Annual	12 μg/m^3	15.0 μg/m^3	Same as primary
	24-hour	—	35 μg/m^3	Same as primary
Lead	Calendar quarter	—	1.5 μg/m^3	Same as primary
	30-day average	1.5 μg/m^3	—	Same as primary
	Rolling 3-month average	—	0.15 μg/m^3	Same as primary

Notes: Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis. (a) Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the EPA. (b) Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. (c) ppm: parts per million. (d) ug/m3: Micrograms per Cubic Meter. (e) The national 1-hour O_3 standard was revoked by the US EPA on June 15, 2005. (f) The annual PM_{10} standard was revoked by the US EPA on September 21, 2006 and a new $PM_{2.5}$ 24-hour standard was established.
Source: California Air Resources Board, November 17, 2008, *Ambient Air Quality Standards*, http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, accessed September 29, 2009.

chemical reaction of reactive organic gases (ROG) and nitrogen oxides (NO_x), which are known as O_3 precursors. O_3 levels are highest from late spring through autumn when precursor emissions are high and meteorological conditions are warm and stagnant.

Motor vehicles create the majority of ROG and NO_x emissions in Butte County. Exposure to levels of O_3 above current ambient air quality standards can lead to human health effects such as lung inflammation and tissue damage and impaired lung functioning. O_3 exposure is also associated with symptoms such as coughing, chest tightness, shortness of breath, and worsening of asthma symptoms. Outdoor workers, athletes, children, and others who spend large amounts of time outdoors during smoggy periods are at the greatest risk of these harmful health effects. Elevated O_3 levels can reduce crop and timber yields, damage native plants, and damage materials such as rubber, fabrics, and plastics. In April 2005, CARB approved a new 8-hour standard of 0.070 parts per million (ppm) and retained the 1-hour O_3 standard of 0.09 ppm after an extensive review of the scientific literature. Evidence from the studies indicates that significant harmful health effects could occur among both adults and children if exposed to levels above these standards.[2]

c. Nitrogen Dioxide

NO_2 is a reddish-brown gas that irritates the lungs. It can cause breathing difficulties at high concentrations. Like O_3, NO_2 is not directly emitted, but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_x and are major contributors to O_3 formation. NO_2 also contributes to the formation of PM_{10}, which is discussed further in Section A.4.e. Levels of NO_2 in Butte County are relatively low.

[2] California Air Resources Board, June 11, 2008, *Ozone and Ambient Air Quality Standards*. Available at http://www.arb.ca.gov/research/aaqs/caaqs/ozone/ozone.htm, accessed: September 1, 2009.

d. Sulfur Oxides

Sulfur oxides, primarily SO_2, are a product of high-sulfur fuel combustion. The main sources of SO_2 are coal and oil used in power stations, industry, and for domestic heating, as well as motor vehicle exhaust and other combustion processes. Industrial chemical manufacturing is another source of SO_2. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children.

e. Particulate Matter

Particulate matter (PM) is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, and dust. Particles 10 microns or less in diameter are defined as "respirable particulate matter," or PM_{10}. Fine particles are 2.5 microns or less in diameter ($PM_{2.5}$) and can contribute significantly to regional haze and visibility reduction. Inhalable particulates come from smoke, dust, aerosols and metallic oxides. Although particulates are found naturally in the air, most PM found in the Butte County area is emitted either directly or indirectly by motor vehicles, industry, construction, agricultural activities, and wind erosion of disturbed areas. Most $PM_{2.5}$ is comprised of combustion products, such as smoke.

Extensive research reviewed by CARB indicates that exposure to outdoor PM_{10} and $PM_{2.5}$ levels exceeding current ambient air quality standards is associated with increased risk of hospitalization for lung and heart-related respiratory illnesses, including asthma. PM exposure is also associated with increased risk of premature death, especially in the elderly and people with pre-existing cardiopulmonary disease. In children, studies have shown associations between PM exposure and reduced lung function and increased respiratory illnesses. Besides reducing visibility, the acidic portion of PM (nitrates and sulfates) can harm crops, forests, aquatic, and other ecosystems. In June 2002, CARB adopted new ambient air quality standards for PM_{10} and $PM_{2.5}$, resulting from an extensive review of the health-based scientific literature.

The US EPA recently updated the 24-hour standard for $PM_{2.5}$ and eliminated the annual PM_{10} standard.[3]

f. Toxic Air Contaminants

Toxic Air Contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality, usually because they cause cancer. They include, but are not limited to, the criteria air pollutants listed above in Sections A.4a through A.4.e. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations such as dry cleaners. TACs are typically found in low concentrations, even near their source. Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs, based on the statewide average. According to CARB, health effects of TACs include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that lead to death. Compared to other air toxins CARB has identified and controlled, diesel particulate matter emissions are estimated to be responsible for about 70 percent of the total ambient air toxics risk.[4]

In cool weather, smoke from residential wood combustion can be a source of TACs. Localized high TAC concentrations can result when cold stagnant air traps smoke near the ground. This occurs in sheltered valleys during the winter. Wood smoke also contains a significant amount of PM_{10} and $PM_{2.5}$. Wood smoke is an irritant and is implicated in worsening asthma and other chronic lung problems.

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[3] California Air Resources Board, June 26, 2008, *Ambient Air Quality Standards (AAQS) for Particulate Matter*. Available at http://www.arb.ca.gov/research/aaqs/pm/pm.htm, accessed: September 2, 2009.

[4] California Air Resources Board, Stationary Source Division, Mobile Source Control Division, October 2000, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, Sacramento, CA.

5. Air Quality Attainment Plans

The California CAA requires air districts to adopt air quality attainment plans and continuously monitor their progress. Air districts must also periodically revise attainment plans to reflect new conditions and requirements in accordance with schedules mandated by the federal and State CAAs. The BCAQMD's Air Quality Attainment Plan (Plan) was adopted in 1991 and updated in 1994, 1997, 2000, and 2003. In 2006, the BCAQMD collaborated with other air pollution control districts and air quality management districts for counties located in the Northern Sacramento Valley Air Basin (NSVAB) to prepare a joint Air Quality Attainment Plan. The Plan identifies improvement areas relative to the BCAQMD's 2003 Plan, proposes strategies to attain the 1-hour CAAQS for O_3, describes cooperative actions to address air pollution problems, and focuses on the adoption of control measures for stationary, area-wide, and indirect sources.[5]

According to district staff, the BCAQMD is preparing to submit State Implementation Plans (SIP) for O_3 and $PM_{2.5}$. Butte County will be required to implement these plans following federal redesignation of these pollutants to nonattainment status, as described further below. The SIPs will be submitted no later than March 12, 2013 and December 18, 2012 for O_3 and $PM_{2.5}$, respectively, and will document how air quality standards for O_3 and $PM_{2.5}$ will be attained.[6]

B. Existing Conditions

Butte County is located in the NSVAB, which includes the counties of Butte, Colusa, Glenn, Shasta, Sutter, Tehama, and Yuba. The NSVAB is bounded

[5] Northern Sacramento Valley Air Pollution Control Districts and Air Quality Management Districts, 2006, *Northern Sacramento Valley Planning Area 2006 Air Quality Attainment Plan*. Available at http://www.bcaqmd.org/page/_files/Attainment-Plan-2006--Final.pdf, accessed September 2, 2009.

[6] Williams, Gail, Senior Air Quality Planner, Butte County Air Quality Management District, personal communication with Laura Smith, ICF Jones & Stokes, September 2, 2009.

on the north by the Cascade Range, on the south by the Greater Sacramento Air Region and San Joaquin Valley Air Basin, on the east by the Sierra Nevada Mountains, and on the west by the Coast Range.

This section describes the existing air quality conditions for Butte County, including regional climate and meteorology in the NSVAB, monitoring data, attainment status, and sensitive land uses.

1. Regional Climate and Meteorology

Summer conditions in the NSVAB are typically characterized by high temperatures and low humidity, with temperatures averaging approximately 90°F during the day and 50°F at night. During the summer months, the prevailing winds are typically from the south.

Winter conditions are characterized by occasional rainstorms interspersed with stagnant and sometimes foggy weather. The daytime average temperature is in the low 50s°F and nighttime temperatures average in the upper 30s°F. During winter, winds predominate from the south, but north winds frequently occur. Rainfall occurs mainly from late October to early May, with an average of 17.2 inches per year, but this amount can vary significantly each year.

Dispersion of local pollutant emissions are predominantly affected by the prevailing wind patterns and inversions that often occur in the NSVAB. Within the NSVAB, two types of inversions can occur. During summer months, sinking air forms a "lid" over the region and confines pollution to a shallow layer near the ground, which can contribute to photochemical smog problems. During winter nights, air near the ground cools while the air aloft remains warm, which can cause localized air pollution "hot spots" near emission sources.[7]

[7] Butte County Air Quality Management District, 1997, *Indirect Source Review guidelines*, Chico, CA, page 3.

2. Monitoring Data

Existing air quality conditions in Butte County can be characterized in terms of the ambient air quality standards that the federal and State governments have established for various pollutants, which are shown in Table 4.3-1, and by monitoring data collected in the region. Monitoring data concentrations are typically expressed in terms of ppm or micrograms per cubic meter (μg/m3). Air quality monitoring stations located in Butte County include the Chico monitoring station, which monitors for O_3, CO, PM_{10}, and $PM_{2.5}$; the Paradise Airport Road monitoring station, which monitors for O_3; and the Paradise Fire Station monitoring station, which monitors for PM_{10}. Air quality monitoring data from these monitoring stations are summarized in Table 4.3-2. The table includes data for the last three years in which complete data is available, 2006 to 2008. As indicated by Table 4.3-2, the above monitoring stations have experienced occasional violations of the following standards during the three-year monitoring period:

- 1-hour ozone: CAAQS
- 8-hour ozone: CAAQS and NAAQS
- PM_{10}: CAAQS
- $PM_{2.5}$: NAAQS

3. Attainment Status

If monitored pollutant concentrations meet State or federal standards over a designated period of time, the area is classified as being in *attainment* for that pollutant. If monitored pollutant concentrations violate the standards, the area is considered a *nonattainment* area for that pollutant. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated *unclassified*. *Unclassified* designations are typically applied to non-urbanized areas where levels of the pollutant are not a concern. Areas that were previously designated as nonattainment areas but have recently met the standard are called *maintenance* areas.

The EPA has classified the City of Chico as a Subpart 1 nonattainment area for the 8-hour O_3 standard, while the rest of Butte County is classified as an unclassified/attainment area. According to BCAQMD staff, the EPA will

TABLE 4.3-2 **AMBIENT AIR QUALITY MONITORING DATA MEASURED AT MONITORING STATIONS WITHIN BUTTE COUNTY**

	Chico			Paradise Airport Road			Paradise Fire Station		
Pollutant Standards	**2006**	**2007**	**2008**	**2006**	**2007**	**2008**	**2006**	**2007**	**2008**
Ozone (O_3)									
Maximum 1-hour concentration (ppm)	0.090	0.094	0.111	0.104	0.102	0.125	–	–	–
Maximum 8-hour concentration (ppm)	0.080	0.084	0.096	0.094	0.095	0.108	–	–	–
Number of days standard exceeded:[a]									
CAAQS 1-hour (>0.09 ppm)	0	0	2	8	1	3	–	–	–
NAAQS 8-hour (>0.075 ppm)	4	3	6	33	12	16	–	–	–
CAAQS 8-hour (>0.070 ppm)	19	10	14	59	30	23	–	–	–
Carbon Monoxide (CO)									
Maximum 8-hour concentration (ppm)	2.70	2.16	2.74	–	–	–	–	–	–
Maximum 1-hour concentration (ppm)	4.3	3.3	3.1	–	–	–	–	–	–
Number of days standard exceeded:[a]									
NAAQS 8-hour (≥9 ppm)	0	0	0	–	–	–	–	–	–
CAAQS 8-hour (≥9.0 ppm)	0	0	0	–	–	–	–	–	–
NAAQS 1-hour (≥35 ppm)	0	0	0	–	–	–	–	–	–
CAAQS 1-hour (≥20 ppm)	0	0	0	–	–	–	–	–	–
Particulate Matter (PM_{10})[b]									
National[c] maximum 24-hour concentration (µg/m³)	76.0	61.9	143.5	–	–	–	52.0	116.0	31.3
National[c] second-highest 24-hour concentration (µg/m³)	65.0	61.0	112.4	–	–	–	51.0	50.0	20.8
State[d] maximum 24-hour concentration (µg/m³)	81.0	66.1	140.8	–	–	–	48.0	108.0	30.0
State[d] second-highest 24-hour concentration (µg/m³)	70.0	65.0	111.6	–	–	–	48.0	47.0	20.9
National annual average concentration (µg/m³)	26.3	21.3	27.3	–	–	–	19.6	17.5	9.2

TABLE 4.3-2 **AMBIENT AIR QUALITY MONITORING DATA MEASURED AT MONITORING STATIONS WITHIN BUTTE COUNTY** (CONTINUED)

	Chico			Paradise Airport Road			Paradise Fire Station		
Pollutant Standards	**2006**	**2007**	**2008**	**2006**	**2007**	**2008**	**2006**	**2007**	**2008**
State annual average concentration ($\mu g/m^3$)[e]	26.9	21.8	27.7	–	–	–	18.4	–	–
Number of days standard exceeded:[a]									
NAAQS 24-hour (> 150 $\mu g/m^3$)[f]	0	0	0	–	–	–	0	0	–
CAAQS 24-hour (> 50 $\mu g/m^3$)[f]	26	21	27	–	–	–	0	–	–
Particulate Matter ($PM_{2.5}$)									
National[c] maximum 24-hour concentration ($\mu g/m^3$)	67.0	53.9	107.6	–	–	–	–	–	–
National[c] second-highest 24-hour concentration ($\mu g/m^3$)	59.0	53.0	93.8	–	–	–	–	–	–
State[d] maximum 24-hour concentration ($\mu g/m^3$)	76.1	83.7	190.9	–	–	–	–	–	39.0
State[d] second-highest 24-hour concentration ($\mu g/m^3$)	74.0	70.2	180.1	–	–	–	–	–	27.1
National[b] annual average concentration ($\mu g/m^3$)	13.2	10.7	16.4	–	–	–	–	–	–
State[c] annual average concentration ($\mu g/m^3$) [e]	14.6	14.4	18.2	–	–	–	–	–	–
Number of days standard exceeded:[a]									
NAAQS 24-hour (> 35 $\mu g/m^3$)[f]	29	24	37	–	–	–	–	–	–

Notes: CAAQS = California ambient air quality standards.
NAAQS = national ambient air quality standards.
– = insufficient data available to determine the value.

[a] An exceedance is not necessarily a violation.

[b] Measurements usually are collected every 6 days.

[c] National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.

[d] State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, State statistics are based on California approved samplers.

[e] State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

[f] Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored. Values have been rounded.

Sources: California Air Resources Board, 2009, *CARB Databases: Aerometric Data Analysis and Management System (ADAM)*, http://www.arb.ca.gov/html/databases.htm, accessed September 1, 2009; US Environmental Protection Agency, January 10, 2009, *Air Data*, http://www.epa.gov/air/data/reports.html, accessed September 1, 2009.

redesignate the entire county as a nonattainment area on or before March 12, 2010.[8] For the CO standard, the EPA has classified the Chico Urbanized Area as a moderate (≤ 12.7 ppm) maintenance area, while the rest of Butte County is classified as an unclassified/attainment area. The EPA has designated the lower elevations of Butte County as a nonattainment area for the $PM_{2.5}$ standard. The EPA has classified Butte County as an unclassified/attainment area for the PM_{10} standard.[9]

CARB has classified Butte County as a moderate nonattainment area for the 1-hour O_3 standard and as a nonattainment area for the 8-hour O_3 standard. For the CO standard, CARB has classified Butte County as an attainment area. CARB has classified Butte County as a nonattainment area for the PM_{10} and $PM_{2.5}$ standards.[10]

Butte County's attainment status for each of these pollutants relative to the NAAQS and CAAQS is summarized in Table 4.3-3.

4. Sensitive Land Uses

Sensitive land uses are generally defined as locations where people reside or where the presence of air emissions could adversely affect the use of the land. Typical sensitive receptors include residents, schoolchildren, hospital patients, and the elderly. Sensitive receptors are located throughout Butte County but tend to be concentrated in urbanized areas.

[8] Williams, Gail, Senior Air Quality Planner, Butte County Air Quality Management District, personal communication with Laura Smith, ICF Jones & Stokes, September 2, 2009.

[9] US Environmental Protection Agency, July 11, 2009, *The Green Book Nonattainment Areas for Criteria Pollutants*. Available at http://www.epa.gov/oar/oaqps/greenbk/, accessed September 1, 2009.

[10] California Air Resources Board, February 9, 2009. *2006 State Area Designations*. Available at http://www.arb.ca.gov/desig/adm/adm.htm, accessed September 1, 2009.

TABLE 4.3-3 **FEDERAL AND STATE ATTAINMENT DESIGNATIONS FOR BUTTE COUNTY**

Pollutant	Federal Designation	State Designation
1-hour ozone	Transitional nonattainment for Chico area (Clean Air Act Section 185A area)[a]	Moderate nonattainment
8-hour ozone	Subpart 1 nonattainment for Chico area[b]	Nonattainment
Carbon monoxide	Moderate (≤ 12.7 ppm) maintenance for Chico area	Attainment
Inhalable particulate matter (PM_{10})	Unclassified/attainment	Nonattainment
Inhalable particulate matter ($PM_{2.5}$)	Unclassified/attainment[c]	Nonattainment

[a] Previously in non-attainment area, no longer subject to the 1-hour standard as of June 15, 2005.
[b] The EPA will redesignate the entire county as a nonattainment area on or before March 12, 2010
[c] The EPA will redesignate the lower elevations of Butte County as a nonattainment area on or before December 18, 2009.
Sources: US Environmental Protection Agency, July11, 2009, *The Green Book Nonattainment Areas for Criteria Pollutants*, http://www.epa.gov/oar/oaqps/greenbk/, accessed September 9, 2009; Williams, Gail, Senior Air Quality Planner, Butte County Air Quality Management District, personal communication with Laura Smith, ICF Jones & Stokes, September 2, 2009.

C. Standards of Significance

General Plan 2030 and the ALUCP override would have a significant impact on air quality if they 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 non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

In addition to the above standards, significance criteria established by the applicable air quality management or air pollution control district may be relied on to make determinations of impact. The BCAQMD has specified significance thresholds within its *CEQA Air Quality Handbook* to determine air quality impacts for projects located within the NSVAB.[11]

The BCAQMD has three levels of emission thresholds, and depending on the emissions produced from the proposed project, different mitigation measures would be required. Operational emission thresholds are presented in Table 4.3-4. If construction is anticipated to last longer than one year, these thresholds can also be used to evaluate construction impacts. With the anticipated federal O_3 and $PM_{2.5}$ redesignations, District staff has indicated that these thresholds will be lowered sometime in January 2010. In addition, independent thresholds for construction activities will be established.[12]

The three levels of emission thresholds are described below.

- **Level A:** Sources that have the potential to emit less than 25 pounds per day of ROG or NO_x, or less than 80 pounds per day of PM_{10}, would be subject to the BCAQMD's recommended list of standard mitigation measures unless exempted in writing by the applicable planning agency. The project proponent would be required to coordinate with the planning agencies to identify feasible mitigation measures.

[11] Butte County Air Quality Management District, January 2008, *CEQA Air Quality Handbook Guidelines for Assessing Air Quality Impacts for Project Subject to SEQA Review*, Chico, CA, pages 2-2 and 2-4.

[12] Williams, Gail, Senior Air Quality Planner, Butte County Air Quality Management District, personal communication with Laura Smith, ICF Jones & Stokes, September 2, 2009.

TABLE 4.3-4 **BUTTE COUNTY AIR QUALITY MANAGEMENT DISTRICT OPERATIONAL EMISSION THRESHOLDS (POUNDS PER DAY)**

	ROG	NO_x	PM_{10}
Level A	≤ 25	≤ 25	≤ 80
Level B	>25	>25	>80
Level C	>137	>137	>137

Source: Butte County Air Quality Management District, January 2008, *CEQA Air Quality Handbook Guidelines for Assessing Air Quality Impacts for Project Subject to SEQA Review*, Chico, CA, pages 2-2 and 2-4.

- **Level B:** Sources that have the potential to emit greater than 25 pounds per day of ROG or NO_x, or greater than 80 pounds per day of PM_{10}, would be subject to as many of the BCAQMD's best available mitigation measures as are feasible, in addition to the BCAQMD's recommended list of standard mitigation measures. Project proponents would be required to coordinate with the planning agencies to identify feasible mitigation measures.
- **Level C:** Sources that have the potential to emit 137 pounds per day or greater of ROG, NO_x or PM_{10} would select as many of the BCAQMD's supplemental mitigation measures as are feasible, in addition to the BCAQMD's recommended list of standard mitigation measures. Project proponents would be required to coordinate with the planning agencies to identify feasible mitigation measures, including off-site mitigation measures. Conversation with BCAQMD staff indicates that any emissions that exceed the BCAQMD's Level C thresholds of 137 pounds per day would be considered to have a significant air quality impact, and PM_{10} emissions in excess of this level would also require that a Dust Control Plan be submitted to the BCAQMD for approval.[13]

[13] Williams, Gail, Senior Air Quality Planner, Butte County Air Quality Management District, Chico, CA. April 29, 2005. Email to Shannon Hatcher.

For CO hotspot emissions, typically including very congested intersections, a significant impact is anticipated to occur if CALINE4 dispersion modeling would result in CO concentrations in excess of the 1- or 8-hour CAAQS.

D. Impact Discussion

The following discussion provides an analysis of potential project and cumulative air quality impacts that could occur as a result of the projected 2030 buildout of General Plan 2030. Potential impacts resulting from increased traffic from planned development are evaluated against the numerical thresholds provided in Table 4.3-4. The impacts resulting from increased traffic are based on the traffic model discussed in Chapter 4.13, and take into account development not only from projected 2030 buildout of General Plan 2030, but also projected development within the incorporated municipalities in Butte County and the surrounding counties, as explained further in Section D.2 of Chapter 4.13, Transportation and Circulation. Potential impacts from non-vehicle sources and construction activities, as well as health risks from diesel exhaust, are evaluated qualitatively against current conditions.

Implementation of the ALUCP override would have no air quality impact in Butte County, and is not discussed further in this section.

1. Project Impacts

a. Consistency with Applicable Air Quality Plans

The assessment of air quality plan consistency in this section is based on a quantitative analysis of impacts resulting from the projected 2030 buildout of General Plan 2030. In accordance with the CCAA, an air quality attainment plan is required to be prepared for areas designated as nonattainment or maintenance areas with regards to the NAAQS or CAAQS. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date. Typically, a General Plan is deemed inconsistent with air quality plans if it would result in population, VMT, or emissions that exceed the estimates included in the applicable

air quality plan, since such exceedences would hinder achievement of federal and State air quality standards.

The Northern Sacramento Valley Planning Area (NSVPA) 2006 Air Quality Attainment Plan (NSVPA Plan), which is discussed in Section A.5, is the most recent air quality planning document for Butte County. The NSVPA Plan includes forecasted ROG and NO_x emissions for the entire NSVPA region through the year 2020. These emissions estimates are not apportioned by county or municipality. In addition, the NSVPA Plan does not include VMT or population projections. Given the data shortcomings and the regional scope of the current air quality plan, BCAQMD has concluded that evaluating General Plan 2030 against the growth rates presented in the NSVPA Plan is inappropriate.[14] Consequently, an alternative method of assessment was developed in consultation with BCAQMD staff for use in this General Plan EIR.[15]

Because the NSVPA Plan provides insufficient detail to allow comparison of its projections with the projected 2030 buildout allowed under General Plan 2030, this EIR compares General Plan 2030 to the projections of future population and vehicle miles traveled (VMT) used by BCAQMD and BCAG to predict and plan for future growth. These projections are considered a reasonable proxy for the NSVPA Plan because the pollutant emissions regulated by the NSVPA Plan are generated primarily by people living and driving in the region. In addition, as described below, the BCAG and BCAQMD projections reflect land use policies and long-range transportation improvements,

[14] Williams, Gail. Senior Air Quality Planner, Butte County Air Quality Management District, Chico, CA. November 3, 2009. Telephone conversation with Laura Smith.

[15] Williams, Gail. Senior Air Quality Planner, Butte County Air Quality Management District, Chico, CA. November 3, 2009. Telephone conversation with Laura Smith.

and conform to applicable SIPs and all sections of the EPA's Transportation Conformity Rule.[16]

Therefore, county-specific pollutant emissions, VMT, and population forecasts for 2030, provided by BCAG, were used to evaluate whether General Plan 2030 would exceed countywide growth estimates. The countywide VMT projections were calculated based on the existing General Plans for the incorporated municipalities within the county, including Biggs, Chico, Gridley, Oroville, and Paradise, as well as for unincorporated Butte County, and they consider all applicable land use policies specified by those General Plans.[17] In addition, BCAG's 2030 pollutant emission forecasts were modeled using EMFAC2007 and the BCAG Transportation Model, which incorporates BCAG's long-range planning assumptions about future transportation improvements contained within the RTP.

Table 4.3-5 summarizes projected 2030 VMT, population, and pollutant emissions for Butte County and General Plan 2030. The difference between the 2030 BCAG and unincorporated Butte County data represent VMT, population, and emissions directly attributable to General Plan 2030.

As indicated by Table 4.3-5, projected 2030 VMT, population, and pollutant emissions resulting from implementation of General Plan 2030 will not exceed countywide BCAG growth estimates. Furthermore, not only does General Plan 2030 incorporate numerous transportation control measures, implementation of the plan would result in a net decrease of VMT relative to the no project condition, as discussed in more detail in Section D.1.b.ii,

[16] Butte County Association of Governments. 2008a. Draft Environmental Impact Report-2008 Butte County General Plan. Page 3.3-17. September 2008. Chico, CA.; Butte County Association of Governments. 2006. Butte County Regional Growth Projections: 2006-2030. Available: http://www.bcag.org/documents/demographics/pop_emp_projections/Final_Regional_Growth_Projections.pdf.

[17] Devine, Chris. Butte County Association of Governments, Chico, CA. October 13, 2009—Telephone conversation with Laura Smith.

TABLE 4.3-5 **2030 VMT, POPULATION, AND POLLUTANT EMISSION PROJECTIONS**

	2030 BCAG Projections[a]	General Plan 2030	Percent Difference
VMT	6,439,000	2,108,529[b]	-205%
Population	334,842	117,500	-185%
ROG (lbs/day)	3,410	423[c]	-706%
NOx (lbs/day)	6,140	1,359[c]	-352%
CO (lbs/day)	22,290	4,682[c]	-376%
PM (lbs/day) [(4)]	670	186[c]	-260%

[a] 2030 Butte County VMT and emissions projections were interpolated from 2025 and 2035 data presented in the *Draft Environmental Impact Report for the 2008 RTP* and the associated *Final Conformity Analysis and Determination*. using the following equation: ((((2035 data-2025 data)/10)*5)+2025 data)

[b] Provided by Fehr & Peers. Represents VMT with project conditions for the unincorporated portion of Butte County.

[c] Emissions modeling completed by ICF Jones & Stokes using VMT data provided by Fehr & Peers and the CT-EMFAC model

[d] Emissions represent total PM (PM10 + PM2.5)

Sources: ICF Jones & Stokes CT-EMFAC modeling; Butte County Association of Governments. 2008a. Draft Environmental Impact Report-2008 Butte County General Plan. Page 3.3-16, 3.3-17, 3.3-29. September 2008. Chico, CA.; Butte County Association of Governments. 2006. Butte County Regional Growth Projections: 2006-2030.Available: http://www.bcag.org/documents/demographics/pop_emp_projections/Final_Regional_Growth_Projections.pdf>; Butte County Association of Governments. 2008b. Final Air Quality Conformity Analysis and Determination. Page 13. Adopted December 11, 2008. Chico, CA.; Accessed: November 10, 2009.; Breiland, Kendra. Senior Transportation Planner. Fehr & Peers, Fair Oaks, CA. November 24, 2009—Email message to Laura Smith.

below.[18] Consequently, General Plan 2030 is not expected to obstruct countywide efforts to achieve federal and State air quality standards. This impact is considered *less-than-significant*.

b. Violate any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation

This impact discussion includes separate discussions about CO emissions from vehicle exhaust, other criteria pollutants from vehicle- and non-vehicle sources, and odors.

i. Carbon Monoxide Emissions from Vehicle Exhaust

The assessment of carbon monoxide emissions from vehicles in this section is based on a quantitative analysis of impacts resulting from the projected 2030 buildout of General Plan 2030. Elevated levels of CO concentrations are typically found in areas with significant traffic congestion. For this analysis, the effects of CO "hot spots" were evaluated through CO dispersion modeling using CARB's EMFAC2007 (Version 2.3), CLAINE4, and traffic data provided by the traffic engineers. A technical discussion of modeling procedures is provided in Appendix A.

CO emissions were modeled for existing (2006) and future (2030) project conditions. Only the PM peak hour traffic was modeled, as the traffic data indicated that level of service and delays would be worse in the afternoon than in the morning. CO modeling was conducted on the following five roadway segments. These segments were selected because they either had the worst level of service/traffic volumes, or are expected to experience the largest worsening in level of service/traffic volumes under future with project conditions.

- Highway 99 from Highway 149 to Durham-Pentz Road
- Highway 99 from Durham-Pentz Road to the Skyway
- Highway 99 from East 20th Street to Highway 32

[18] Breiland, Kendra. Senior Transportation Planner. Fehr & Peers, Fair Oaks, CA. November 10, 2009—Email message to Shannon Hatcher and Dave Buehler.

- Highway 99 from Highway 32 to Cohasset Road
- Highway 162 from Highway 70 to Feather River Boulevard

Table 4.3-6 presents the results of the CO "hotspot" modeling, and indicates that implementation of General Plan 2030 would not result in violations of the State or federal 1-hour or 8-hour CO standards. Consequently, the impact of traffic conditions from General Plan 2030 on ambient CO levels is considered *less than significant*.

ii. Criteria Pollutant Emissions from Vehicle Miles Traveled

The assessment of criteria pollutant emissions from vehicles in this section is based on a quantitative analysis of impacts resulting from the projected 2030 buildout of General Plan 2030. The primary operational emissions associated with the proposed project are CO, PM_{10}, $PM_{2.5}$, and ozone precursors (ROG and NO_x), emitted as vehicle exhaust. For this analysis, emissions of these pollutants for existing year (2006) and 2030 project conditions were evaluated using the CT-EMFAC 2007 model and traffic data provided by the project traffic engineers. VMT data included vehicle activity in surrounding areas, as countywide traffic patterns would be affected by implementation of the proposed project. Appendix B contains a technical discussion of the modeling procedures, and Table 4.3-7 summarizes the results of the modeling.

As indicted in Table 4.3-7, implementation of General Plan 2030 would result in net decreases in CO, ROG, NO_x, and PM_{10}, and $PM_{2.5}$ relative to existing conditions. Vehicular emission rates are anticipated to lessen in future years due to continuing improvements in engine technology and the phasing out of older, higher-emitting vehicles. These decreases in emission rates are sufficient to offset the increases in VMT seen between existing and 2030 project conditions, resulting in the decreased CO, ROG, NO_x, PM_{10}, and $PM_{2.5}$ emissions observed in Table 4.3-7.

Seven of the circulation goals and their associated policies and actions, and one land use policy set forth in General Plan 2030 would help reduce criteria pollutant emissions from mobile sources. Specifically, Goal CIR-1 promotes

TABLE 4.3-6 **CARBON MONOXIDE MODELING RESULTS AT DESIGNATED RECEPTOR LOCATIONS**

		Existing (2006)		2030 Project	
Segment	Receptor (Feet)	1-Hour CO[b]	8-Hour CO[c]	1-Hour CO[b]	8-Hour CO[c]
Highway 149 to Durham – Pentz Road	3	4.96	3.27	3.86	2.61
	25	4.66	3.09	3.76	2.55
	50	4.46	2.97	3.76	2.55
	100	4.26	2.85	3.76	2.55
	250	3.96	2.67	3.56	2.43
	500	3.86	2.61	3.56	2.43
Durham – Pentz Road to the Skyway	3	4.56	3.03	3.86	2.61
	25	4.36	2.91	3.86	2.61
	50	4.26	2.85	3.76	2.55
	100	4.06	2.73	3.76	2.55
	250	3.86	2.61	3.66	2.49
	500	3.76	2.55	3.56	2.43
East 20th Street to Highway 32	3	5.86	3.81	4.06	2.73
	25	5.36	3.51	3.96	2.67
	50	5.06	3.33	3.86	2.61
	100	4.66	3.09	3.76	2.55
	250	4.26	2.85	3.76	2.55
	500	4.06	2.73	3.66	2.49

TABLE 4.3-6 **CARBON MONOXIDE MODELING RESULTS AT DESIGNATED RECEPTOR LOCATIONS** (CONTINUED)

		Existing (2006)		2030 Project	
Segment	Receptor (Feet)	1-Hour CO[b]	8-Hour CO[c]	1-Hour CO[b]	8-Hour CO[c]
Highway 32 to Cohasset Road	3	5.86	3.81	4.06	2.73
	25	5.36	3.51	3.96	2.67
	50	5.06	3.33	3.86	2.61
	100	4.66	3.09	3.76	2.55
	250	4.26	2.85	3.66	2.49
	500	4.06	2.73	3.66	2.49
Highway 70 to Feather River Boulevard	3	5.06	3.33	3.96	2.67
	25	4.76	3.15	3.86	2.61
	50	4.56	3.03	3.86	2.61
	100	4.36	2.91	3.76	2.55
	250	4.06	2.73	3.66	2.49
	500	3.86	2.43	3.56	2.43

[a] Background concentrations of 3.56 ppm and 2.43 ppm were added to the modeling 1-hour and 8-hour results, respectively.

[b] The federal and State 1-hour standards are 35 and 20 ppm, respectively.

[c] The federal and State 8-hour standards are 9 and 9.0 ppm, respectively.

Source: ICF Jones & Stokes CALINE4 modeling, 2009.

intergovernmental communication and cooperation during transportation planning. Since integrated planning coordinates transportation decisions at a municipal and/or countywide level, roadway issues are efficiently addressed, thus helping to improve the transportation network and reduce potential emissions associated with traffic problems.

TABLE 4.3-7 **CRITERIA POLLUTANT EMISSIONS FROM MOBILE SOURCES (POUNDS PER DAY)**

Scenario	Daily VMT	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
Existing (2006)	4,126,991	4,922	20,736	65,610	601	551
2030 Project	6,397,512	1,253	4,123	14,205	293	273
Difference Between Existing (2006) and 2030 Project Conditions	2,270,521	-3,669	-16,613	-51,405	-308	-279

Source: ICF Jones & Stokes CT-EMFAC modeling, 2009.

Goals CIR-2, CIR-3, CIR-4, and CIR-5 target the main source of criteria pollutant emissions, automobile VMT, by promoting alternative forms of transportation. Associated policies support public transit, carpooling, home businesses, street-safety improvements, bicycle systems, and walkable neighborhoods. Together these goals would reduce VMT and thus, directly reduce emissions of CO, ROG, NO_x, PM_{10}, and $PM_{2.5}$.

Goals CIR-6 and CIR-7 would help streamline the transportation network through policies that maximize the mobility of people and goods. Associated policies would promote roadway improvements, encourage new roads to be located near future and existing development, and require a level of service (LOS) C or better during the PM peak hour on all County-maintained roads outside of municipal Spheres of Influence (SOIs), a level of service consistent with municipal standards within SOIs, and a level of service consistent with Caltrans protocols on all State highways. Land Use Element Policy LU-P9.2 would further improve the transportation network by directing the County to balance development densities with traffic-carrying capacities of existing and proposed circulation plans. Together, these goals and policies would help create a more efficient transportation network, thus reducing emissions associated with congestion and stop-and-go traffic.

In addition to these General Plan 2030 goals and policies, as discussed in Section C, the BCAQMD has developed standard mitigation measures for individual projects, depending on the level of emissions. These would further reduce criteria pollutant emissions from mobile sources resulting from future development allowed by General Plan 2030.

The above goals and policies and BCAQMD standard mitigation measures would help reduce criteria pollutant emissions from mobile sources beyond the anticipated decreases indicated in Table 4.3-7. Because criteria pollutant emissions are expected to decrease relative to existing conditions, this impact is considered *less than significant*.

iii. Criteria Pollutant Emissions from Non-Vehicle Sources

The assessment of criteria pollutant emissions from non-vehicle sources in this section is based on a spatial analysis of impacts resulting from the location of development that would be allowed under General Plan 2030.

a) Mining

Mining in Butte County centers on sand and gravel, although gold mining also occurs. Air quality impacts could result from mining operations, such as digging, transporting, and processing gravel, and through the use of heavy equipment. Together, these activities could generate criteria pollutants, such as CO, NO_x, SO_x, PM_{10}, and $PM_{2.5}$, as well as air toxins like volatile organic compounds (VOCs) and diesel exhaust.[19]

General Plan 2030 identifies mineral resource zones that will be conserved for mining purposes in accordance with the Surface Mining and Reclamation Act of 1975 (SMARA). These zones represent a continuation of existing conditions, since there are existing mining uses at these sites. General Plan 2030 would not change existing County procedures for allowing or regulating mining uses. Therefore, adoption of General Plan 2030 would not be expected to

[19] California Air Resources Board and US Environmental Protection Agency, April 2005, *Air Quality and Land Use Handbook: A Community Health Perspective*, page A-1.

result in either an increase or a decrease in mining uses in Butte County. It is therefore logical to assume that potential mining-related emissions sources would not increase. In addition, it is likely that existing emissions from heavy duty equipment used in the mining process will decline as a function of time due to new EPA diesel fuel regulations. These regulations are expected to "reduce harmful emissions by 90 percent or more."[20]

Since existing emissions from heavy-duty equipment are expected to decline, and implementation of General Plan 2030 is not expected to increase the number of emissions sources relative to existing conditions, it is likely that future emissions form mining operations will decrease. Consequently, this impact is considered *less than significant*.

b) Agriculture

The agricultural industry produces a number of air pollutants that can have adverse effects on air quality and human health. According to CARB, agricultural operations release CO, NO_x, SO_x, PM_{10}, VOCs, and pesticides.[21] Diesel exhaust is also produced by heavy-duty agricultural equipment, such as tractors. Future CARB control measures for in-use agricultural equipment are expected to accelerate fleet turnover and reduce PM and NO_x emissions. In addition, new EPA diesel fuel regulations for off-road heavy duty equipment will "reduce harmful emissions by 90 percent or more."[22]

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[20] U.S. Environmental Protection Agency, 2009, *Direct Final Rule and Notice of Proposed Rulemaking for Amendments to the Non-Road and Highway Diesel Fuel Regulations*, available at http://www.epa.gov/otaq/regs/fuels/diesel/420f06033.htm, accessed December 28, 2009.

[21] California Air Resources Board and US Environmental Protection Agency, April 2005, *Air Quality and Land Use Handbook: A Community Health Perspective*, page 33.

[22] U.S. Environmental Protection Agency, 2009, *Direct Final Rule and Notice of Proposed Rulemaking for Amendments to the Non-Road and Highway Diesel Fuel Regulations*, available at http://www.epa.gov/otaq/regs/fuels/diesel/420f06033.htm, accessed December 28, 2009.

Approximately 599,040 acres in Butte County are currently used for agriculture. Primary uses include field and row crops, orchards, rice, grazing, dry farming, and timber. Implementation of General Plan 2030 is not expected to increase agricultural uses. It is therefore logical to assume that potential emissions sources (e.g. heavy-duty equipment) would not increase. Since new EPA and CARB regulations will reduce future emissions from off-road diesel fuel, and potential emission sources are expected to remain constant between existing and future conditions, it is likely that emissions from the agricultural sector will decrease during implementation of General Plan 2030. Consequently, this impact is considered *less than significant*.

c) Residential, Retail/Office and Industrial Development

Development allowed by General Plan 2030 would result in long-term emissions of CO, ROG, NO_x, and PM_{10}, from residential, retail/office, and industrial buildings. As indicated in Chapter 3, the projected 2030 buildout for the proposed project includes approximately 13,700 new dwelling units, 1.8 million square feet of new retail/office space, and 1.1 million square feet of new industrial space.

Common emission sources from this development include natural gas and wood combustion for energy and heating, criteria pollutants from landscaping equipment, and air toxins from personal household product use. Increased vehicle trips to and from these land uses also generate emissions, especially when development occurs at low densities or is located far from transportation hubs.

Light manufacturing, heavy industrial, service and repair, processing, and warehousing are other potential uses allowed by General Plan 2030. Potential TACs associated with these facilities include, but are not limited to, CO, SO_x, PM_{10}, $PM_{2.5}$, solvents, diesel exhaust, and metals.[23] In addition, development allowed by the proposed project could include gas stations and dry cleaning

[23] California Air Resources Board and US Environmental Protection Agency, April 2005, *Air Quality and Land Use Handbook: A Community Health Perspective*, page A-1.

services. These uses release benzene and percholorethylene, respectively, which are highly regulated carcinogens.[24]

General Plan 2030 includes a number of goals and policies that would help minimize air quality impacts associated with energy consumption and building maintenance. Goal COS-1 aims to reduce greenhouse gas emissions to 1990 levels by 2020. The associated policies encourage use of recycled construction materials, off-site mitigation, and natural stormwater facilities. Goal COS-2 and its associated policies promote green building through compliance with green building standards, such as LEED and Greenpoint Systems. A sustainable energy supply is supported by Goal COS-3 and its associated policies through the expansion and development of hydroelectric power plants, renewable fuel and power sources (solar and wind), and utility lines along existing corridors. Homebuyers would also be given the option of having renewable energy incorporated into new home design. Goal COS-4 and its associated policies aim to conserve energy and fuel resources by rewarding energy efficiency efforts of local businesses, requiring shading ordinances for parking lots, and encouraging designs that maximize energy efficiency and meet the guidelines of the California Energy Star New Homes Program. Finally, Policy COS-P5.3 would help reduce particulate matter by prohibiting wood-burning fireplaces and non-EPA certified wood stoves in new development.

In addition, General Plan 2030 includes policies that protect sensitive receptors from TACs emitted from stationary air pollutant sources, such as industrial and commercial developments. Conservation and Open Space Policies COS-P5.4 and COS-P5.5 require that stationary sources be located more than 500 feet away and/or downwind from residential areas and other sensitive receptors, and that residential developments and other projects with sensitive receptors be located more than 500 feet from stationary air pollutant sources. Policy COS-P5.6 requires new sources of toxic air pollutants to prepare a

[24] California Air Resources Board and US Environmental Protection Agency, April 2005, *Air Quality and Land Use Handbook: A Community Health Perspective*, pages 33 and A-1.

Health Risk Assessment, including establishing appropriate land use buffer zones around those areas posing substantial health risks based upon CARB's guidance provided in the Air Quality Land Use Handbook. Land Use Policy LU-P5.2 groups industrial uses into integrated industrial parks, while Policy LU-P8.4 encourages new industrial development to be located in existing industrial areas. Finally, Policy LU-P5.3 stipulates that new industrial uses shall be designed to avoid adverse air quality impacts to adjacent uses, particularly near residential neighborhoods.

General Plan 2030 goals and policies would also help decrease emissions associated with vehicle trips by encouraging high density and well-planned development. More specifically, Goal LU-8 and its associated policies promote development near existing infrastructure and services. Goal LU-14 provides for orderly and well-planned growth within the South Oroville/Las Plumas Area by restricting development to infrastructure limitations. In addition, Policy LU-P4.2 requires residentially-designated land to be developed at or above the minimum density established by the land use designation for a given area or parcel.

Other General Plan 2030 goals and policies would further reduce emissions from vehicle trips by promoting alternative modes of transportation. As described in Section D.1.b.ii, Goal CIR-3 and its associated policies encourage the design of new neighborhoods to accommodate and promote alternative modes of transportation. In addition, Policy LU-P3.2 promotes walking and recreation by requiring newly-developed neighborhoods to include parks and recreation facilities, as well as sidewalks, bike paths, and other routes to improve circulation to surrounding areas. Finally, Policy LU-P4.3 stipulates that higher density housing be located along collector and arterial streets and within easy walking distance of public facilities.

The above goals and policies would help reduce emissions of CO, ROG, NO_x, and PM_{10}, as well as potential health risks associated with emissions of TACs. In the absence of a quantitative analysis, there is insufficient data to determine the magnitude of these reductions. However, future development

constructed under General Plan 2030 will be subject to project-level CEQA analysis and BCAQMD rules, regulations, and standard mitigation measures. This subsequent project-level review, combined with the goals and policies described in this section would result in a *less-than-significant* impact.

iv. Generation of Construction Emissions

The assessment of construction emissions in this section is based on an analysis of the spatial location of development allowed by General Plan 2030. Construction activities temporarily generate CO, ROG, NO_x, PM_{10}, and $PM_{2.5}$ emissions, which could result in adverse affects on short-term ambient air quality. Primary emission sources include mobile and stationary construction equipment exhaust, employee vehicle exhaust, dust from grading, exposed soil eroded by wind, and ROG from architectural coatings and asphalt paving. Construction-related emissions would vary substantially depending on the level of activity, length of the construction period, specific construction operations, types of equipment, number of personnel, wind and precipitation conditions, and soil moisture content.

Projected 2030 buildout of General Plan 2030 would add a significant amount of development and supporting infrastructure in Butte County. As indicated in Chapter 3, the projected 2030 buildout for the proposed project includes 13,700 new dwelling units, 1.8 million square feet of new retail/office space, and 1.1 million square feet of new industrial space. In addition, General Plan 2030 has planned for three improvements to the transportation network in order to maintain level of service standards. Construction of these projects could result in construction emission in excess of the BCAQMD threshold levels that are provided in Table 4.3.-4.

Implementation of goals and policies from General Plan 2030 would help to minimize construction emissions. In particular, Policy COS-P5.2 requires that best management practices be implemented to reduce air pollutant emissions associated with the construction and operation of development projects. Since the timing and duration of construction activities associated with the buildout projections over the 20-year life of the plan cannot be determined, it

is not possible to determine the magnitude of emissions reductions that would be achieved by this policy. However, future development would undergo CEQA review for project-specific impacts. In addition, since Policy COS-P5.2 requires that best management practices for construction impacts be employed, individual projects will be subject to published BCAQMD best management mitigation measures. When implemented, these measures constitute sufficient mitigation of project-level impacts. Consequently, this impact is considered *less than significant*.

c. Expose Sensitive Receptors to Substantial Concentrations of Diesel Exhaust

The assessment of sensitive receptor exposure to diesel exhaust in this section is based on an analysis of the spatial location of development allowed by General Plan 2030. As indicted in Section A.4.f, CARB has identified diesel exhaust as a TAC. Cancer health risks associated with exposures to diesel exhaust typically are associated with chronic exposure, often defined as a 70-year exposure period. Although elevated cancer rates can result from exposure periods of less than 70 years, acute exposure (i.e. exposure periods of 2 to 3 years) to diesel exhaust is not anticipated to result in an increased health risk.[25]

In addition to the length of the exposure period, the location of potential emissions sources is a major factor in determining the health risk of diesel exhaust. In general, diesel exhaust has a greater potential to harm people when the source of emissions is closer to populations.[26] Children, the elderly, and people with illnesses are more susceptible to the adverse effects of diesel exhaust. Sensitive receptors, or facilities that attract these individuals, are of particular concern when located in close proximity to sources of diesel ex-

[25] California Air Resources Board, Stationary Source Division, Mobile Source Control Division, October 2000, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, Sacramento, CA.

[26] California Air Resources Board and US Environmental Protection Agency, April 2005, *Air Quality and Land Use Handbook: A Community Health Perspective*.

haust. Schools, hospitals, convalescent facilities, and residential areas are examples of sensitive receptors. Even though sensitive receptors are at an increased risk to diesel exhaust, exposure can adversely affect all members of the population. Thus, consideration of potential air quality impacts should address all members of the population.

Diesel-powered construction equipment, heavy-duty trucks, and new industrial and commercial development are the main sources of diesel exhaust associated with implementation of the proposed project. Development allowed by General Plan 2030 would require diesel-powered construction equipment that could generate increased diesel exhaust. In addition, new retail/office, industrial, and transportation developments could increase the concentration of heavy-duty trucks in particular areas. As these land uses compete for decreasing space within the county, sensitive receptors may be relocated or built closer to potential emission sources relative to existing conditions.

Several policies described above would help to minimize the health effects of diesel exhaust and lessen the exposure potential of sensitive receptors. Policy COS-P5.2 would reduce diesel emissions from construction activities through the use of best management practices. Land use and design requirements for industrial and commercial facilities stipulated in Policies LU-P5.2, LU-P5.3, and LU-P8.2 would help mitigate diesel impacts associated with these facilities. Proximity restrictions and health risk assessments required by Policies COS-P5.4, COS-P5.5, and COS-P5.6 would protect sensitive receptors from potential stationary source emissions. Finally, implementation of Goals CIR-2 through CIR-6 and their associated policies and actions would reduce traffic congestion and promote alternative transportation, thus helping to minimize high levels of diesel exhaust associated with stop-and-go traffic.

Taken together, these polices would help reduce diesel exhaust and associated health risks. However, as noted above, with limited quantitative information it is difficult to assess the magnitude of these reductions. The establishment of buffer zones that decrease the likelihood of exposure and the implementation of control technologies that directly reduce diesel PM are typically stipu-

lated as sufficient mitigation to reduce health risks from TACs. Since the goals and policies included in General Plan 2030 stipulate distance requirements and control technologies that would effectively reduce diesel PM exposure, this impact is considered *less than significant.*

d. Generate Significant Levels of Odors

The assessment of odor generation in this section is based on an analysis of the spatial location of development allowed by General Plan 2030. Odors are typically generated from construction diesel exhaust, agricultural operations, and certain types of industrial land uses. In general, residential land uses are not associated with odor generation. The BCAQMD states that a project would have a significant odor impact if it is located in close proximity to sensitive receptors. As discussed above, General Plan 2030 includes several policies that would establish land use buffers around potential sources of odors. Policies LU-P5.2, LU-P5.3, and LU-P8.2 stipulate land use and design requirements for industrial and commercial facilities that would limit the potential for odor exposures. Proximity restrictions outlined by Policies COS-P5.4, COS-P5.5, and COS-P5.6 would further protect sensitive receptors from sources of odors. Finally, Policy COS-P5.2 would help reduce diesel emissions from construction activities, thus minimizing potential odors. These General Plan 2030 policies work to ensure that the proposed project would not expose sensitive receptors to substantial levels of odors. Consequently, this impact is considered *less than significant*.

2. Cumulative Impacts

The traffic-related air pollutant emissions predicted for 2030 and discussed in Section D.1 above are based on cumulative traffic conditions that take into account cumulative development in the county, including development within the incorporated municipalities. As discussed above, implementation of General Plan 2030 is predicted to result in net decreases in CO, ROG, NO_x, PM_{10}, and $PM_{2.5}$, since decreases in emission rates from improvements in engine technology and the phasing out of older higher-emitting vehicles are sufficient to offset the increases in VMT seen between existing and 2030 project conditions. Air pollutant emissions from non-vehicle sources are likely

to occur as a result of development in incorporated cities and the surrounding counties. However, such development would be subject to the requirements of the applicable air quality district and General Plan policies of the applicable municipality or county that address air quality. Therefore, General Plan 2030 would result in a *less-than-significant* cumulative air quality impact.

E. Maximum Theoretical Buildout

Under the maximum theoretical buildout of General Plan 2030, there would be significantly more development than under the projected 2030 buildout analyzed in Section D, in terms of both the amount and the extent of development. As a result, air quality-related impacts would be more significant than those identified in this analysis. However, as discussed in Chapter 3, it is unlikely that maximum theoretical buildout would ever occur under General Plan 2030, and an analysis of maximum theoretical buildout is not required by CEQA.

F. Impacts and Mitigation Measures

Since there are no significant impacts related to air quality as a result of General Plan 2030, no mitigation measures are required.