

4.3 AIR QUALITY

This section of the EIR evaluates the potential air quality impacts of the implementation of subsequent land use activities under the proposed Mendocino County General Plan Update. It examines the climatic influences that affect air quality in Mendocino County and also describes available data on measured contaminant levels. In addition, the section outlines the regulatory and planning agencies and programs relevant to the unincorporated portion of Mendocino County. Information for this section was obtained primarily from the California Air Resources Board, the Mendocino County Air Quality Management District, and from associated public documents that describe air quality conditions. Refer to Section 5.0, Cumulative Impacts, for a discussion of global climate change and county greenhouse gas emissions.

4.3.1 EXISTING SETTING

AIR BASIN CHARACTERISTICS

Mendocino County is part of the North Coast Air Basin, consisting of Del Norte, Humboldt, Trinity, Mendocino, and northern Sonoma counties, and is within the jurisdiction of the Mendocino County Air Quality Management District (MCAQMD). Air basins bordering the North Coast Air Basin include the Northwest Plateau, Sacramento Valley, Lake, and San Francisco Bay Area air basins. The topography in the North Coast Air Basin is similar to that of Mendocino County in that it varies with mountain peaks, valleys, and coastline.

CLIMATE AND METEOROLOGY

The climate of Mendocino County transitions between that of the coast and that of the interior of California. The eastern portion of the county is characterized by warm, dry summers and cool, wet winters. While the Pacific Ocean moderates temperature, maritime influences in the eastern valleys are lessened and climate becomes more continental because of distance from the ocean and the mountain ridges that block the inland flow of marine air. The mean annual air temperature in the Ukiah Valley and nearby areas is about 59 degrees Fahrenheit (° F). To the north, the Willits area and Covelo have a mean annual temperature of about 55° F. In summer, the daily fluctuation of temperature is more than 40° F in the valleys. In the eastern portion of the county, precipitation falls primarily from October through April. Mean totals are as high as 60 inches at the Russian River in the south, and range from 45 to 70 inches at the Eel River. Precipitation is lowest in the southern valleys and highest in the northern mountains (USDA, 1991).

Coastal Mendocino County has a mild Mediterranean climate with abundant rainfall. Cool moist air over the Pacific Ocean has a profound influence on temperatures on the coast and in the coastal valleys. Average annual air temperatures on the coast range from 53° F to 57° F. The cool marine air minimizes the difference between summer and winter and between daytime and nighttime temperatures. Along major river channels, the moist marine air may extend inland 25 miles or more. The influence of the marine air diminishes with increasing elevation and distance from the coastline. Precipitation falls primarily from October through April, averaging about 35 inches annually near Fort Bragg and Point Arena to 80 inches per year near Branscomb. Marine fog commonly occurs in coastal areas, especially during the nearly rainless summer months. The fog frequently moves inland over the lower elevations in the evening, but burns off by midday. Along the coast, the fog may persist for several days (USDA, 2001).

Winds are generally from the northwest, with local variations due to topography. In the daytime, up-canyon local winds predominate, with down-canyon winds along watercourses prevalent later in the day.

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The entire county is affected by inversion layers, where warm air overlays cooler air. Inversion layers trap pollutants close to the ground. In winter these inversions are formed during windless, clear-sky conditions, as cold air collects in low-lying areas such as valleys and canyons. Mendocino County has a high frequency of both ground-based and elevated inversions. Aircraft soundings conducted by the California Air Resources Board from the Ukiah area suggest that ground-level or low-level elevated inversions are present in the central portion of the county 90 percent of the time. During the winter months, strong inversions that persist for several days at a time are common.

AMBIENT AIR QUALITY

Ambient air quality in the county can be inferred from ambient air quality measurements conducted at air quality monitoring stations. MCAQMD has monitoring stations in Ukiah, Willits, and Fort Bragg that record levels of various pollutants. **Table 4.3-1** summarizes the last four years of published ambient air quality data obtained from the air quality monitoring stations in MCAQMD's monitoring area. As depicted in **Table 4.3-1**, there was one recorded instance during the last three years of available data of an exceedance of state or federal standards. This exceedance was for state standards for PM₁₀ at the Fort Bragg monitoring station, mostly due to salt spray.

TABLE 4.3-1
SUMMARY OF AMBIENT AIR QUALITY DATA, 2004 – 2007

Monitoring Station and Measurements	2004	2005	2006	2007
<i>Ozone (1 hour)</i>				
<u>Ukiah</u>				
Maximum concentration (ppm)	0.070	0.088	0.081	0.080
Number of days state standard exceeded	0	0	0	0
Number of days federal standard exceeded	0	0	0	0
<u>Willits</u>				
Maximum concentration (ppm)	0.060	0.067	0.058	0.061
Number of days state standard exceeded	0	0	0	0
Number of days federal standard exceeded	0	0	0	0
<i>Ozone (8 hour)</i>				
<u>Ukiah</u>				
Maximum concentration (ppm)	0.056	0.060	0.069	0.067
Number of days federal standard exceeded	0	0	0	0
<u>Willits</u>				
Maximum concentration (ppm)	0.048	0.050	0.052	0.052
Number of days federal standard exceeded	0	0	0	0
<i>Particulate Matter (PM₁₀)</i>				
<u>Ukiah</u>				
Maximum daily concentration (national/state, µg/m ³)	31.0/32.0	32.0/33.0	36.0/35.0	26.4/27.4
Annual Average Standard (ug/m ³)	20	20	20	20
Number of days state standard exceeded	0	0	0	0
Number of days federal standard exceeded	0	0	0	0
<u>Willits</u>				
Maximum daily concentration (national/state, µg/m ³)	32.0/33.0	33.0/33.0	38.0/37.0	46.0/47.0
Annual Average Standard (ug/m ³)	20	20	20	20
Number of days state standard exceeded	0	0	0	0
Number of days federal standard exceeded	0	0	0	0
<u>Fort Bragg</u>				
Maximum daily concentration (national/state, µg/m ³)	44.0/45.0	46.0/49.0	57.0/60.0	43.0/45.0

Monitoring Station and Measurements	2004	2005	2006	2007
Annual Average Standard ($\mu\text{g}/\text{m}^3$)	20	20	20	20
Number of days state standard exceeded	0	0	1	0
Number of days federal standard exceeded	0	0	0	0
<i>Fine Particulate Matter (PM_{2.5})</i>				
<u>Ukiah</u>				
Maximum 24-hour concentration (national/state, $\mu\text{g}/\text{m}^3$)	18.5/18.5	20/8/20.8	21.0/21.0	16.4/16.4
Annual Average Standard ($\mu\text{g}/\text{m}^3$)	12	12	12	12
Number of days federal standard exceeded	0	0	0	0
<i>Carbon Monoxide (8 hour)</i>				
<u>Ukiah</u>				
Maximum concentration (national/state, ppm)	1.78/1.78	1.51/1.51	1.54/1.62	N/A
Number of days state standard exceeded	0	0	0	
Number of days federal standard exceeded	0	0	0	
<u>Willits</u>				
Maximum concentration, 1-hr/8-hr period (ppm)	1.17/1.17	1.05/1.05	1.09/1.09	N/A
Number of days state (1-hr/8-hr) standard exceeded	0	0	0	
Number of days federal (1-hr/8-hr) standard exceeded	0	0	0	

$\mu\text{g}/\text{m}^3$ - micrograms per cubic meter

ppm - parts per million

Source: California Air Resources Board 2008, EPA 2006.

SENSITIVE RECEPTORS

The term "sensitive receptors" refers to specific population groups, as well as the land uses where they reside for long periods of time. Commonly identified sensitive population groups are children, the elderly, and the acutely and chronically ill. Commonly identified sensitive land uses are residences, schools, playgrounds, childcare centers, retirement homes or convalescent homes, hospitals, and clinics. The major sensitive receptors in Mendocino County are schools, residences, and medical centers.

AMBIENT AIR QUALITY STANDARDS

Both the U.S. Environmental Protection Agency and the California Air Resources Board have established ambient air quality standards for air pollutants. These ambient air quality standards are levels of contaminants considered safe for most people. The federal and California state ambient air quality standards are summarized in **Table 4.3-2** for criteria pollutants. The federal and state ambient standards were developed independently with differing purposes and methods, although both processes attempted to avoid health-related effects. As a result, the federal and state standards differ in some cases. State standards, which are entirely health-based, are more stringent.

The State of California regularly reviews scientific literature regarding the health effects of pollutants. On May 3, 2002, the California Air Resources Board (CARB) staff recommended lowering the level of the annual standard for PM₁₀ and establishing a new annual standard for PM_{2.5} (particulate matter 2.5 micrometers in diameter and smaller). The new standards became effective on July 5, 2003, with another revision on November 29, 2005. In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. Toxic air contaminants (TACs) are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation, and monitoring of TACs is relatively recent compared to that for criteria pollutants. Unlike criteria pollutants, TACs are regulated on the basis of risk rather than specification of safe levels of contamination.

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The U.S. EPA recently adopted a new more stringent standard of 35 µg/m for 24-hour exposures of PM_{2.5}, based on a review of the latest new scientific evidence. At the same time, U.S. EPA revoked the annual PM₁₀ standard due to a lack of scientific evidence correlating long-term exposures of ambient PM₁₀ with health effects.

Air quality in Mendocino County is determined by comparing the amount of criteria pollutants against air quality standards established under the federal and state Clean Air Acts (see Regulatory Framework below). The federal and state standards for the criteria pollutants and other state-regulated air pollutants are shown in **Table 4.3-2**.

TABLE 4.3-2
SUMMARY OF FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Federal Primary Standard	State Standard
Ozone	1-Hour 8-Hour	0.075 ppm	0.09 ppm 0.070 ppm
Carbon Monoxide	8-Hour 1-Hour	9.0 ppm 35.0 ppm	9.0 ppm 20.0 ppm
Nitrogen Dioxide	Annual 1-Hour	0.053 ppm –	0.030 0.18 ppm
Sulfur Dioxide	Annual 24-Hour 1-Hour	0.03 ppm 0.14 ppm –	– 0.04 ppm 0.25 ppm
PM ₁₀	Annual 24-Hour	150 µg/m ³	20 µg/m ³ 50 µg/m ³
PM _{2.5}	Annual 24-Hour	15 µg/m ³	12 µg/m ³ 35 µg/m ³
Lead	30-Day Avg. 3-Month Avg.	– 1.5 µg/m ³	1.5 µg/m ³ –
Sulfates	24-hour	25 µg/m ³	No Federal Standards
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m ³)	
Vinyl Chloride	24-hour	0.01 ppm (26 µg/m ³)	
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) due to particles when the relative humidity is less than 70%.	

Source: California ARB 2008

Notes: ppm = parts per million, µg/m³ = Micrograms per Cubic Meter

AIR POLLUTANTS OF CONCERN AND HEALTH EFFECTS

Pollutants subject to federal ambient air quality standards are referred to as “criteria” pollutants, because the EPA publishes criteria documents to justify the choice of standards. Criteria air pollutants, common emissions sources, and associated effects are summarized in **Table 4.3-3**.

TABLE 4.3-3
CRITERIA AIR POLLUTANTS – SUMMARY OF COMMON SOURCES AND EFFECTS

Pollutant	Description	Sources	Health Effects	Welfare Effects
Carbon Monoxide	Colorless, odorless gas	Motor vehicle exhaust, indoor sources include kerosene wood-burning stoves	Headaches, reduced mental alertness, heart attack, cardiovascular diseases, impaired fetal development, death.	Contribute to the formation of smog.
Sulfur Dioxide	Colorless gas that dissolves in water vapor to form acid, and interacts with other gases and particulates in the air	Coal-fired power plants, petroleum refineries, manufacture of sulfuric acid and smelting of ores containing sulfur	Eye irritation, wheezing, chest tightness, shortness of breath, lung damage.	Contribute to the formation of acid rain, visibility impairment, plant and water damage, aesthetic building damage.
Nitrogen Dioxide	Reddish brown, highly reactive gas	Motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels	Susceptibility to respiratory infections, irritation of the lung and respiratory symptoms (e.g., cough, chest pain, difficulty breathing).	Contribute to the formation of smog, acid rain, water quality deterioration, global warming, and visibility impairment.
Ozone	Gaseous pollutant when it is formed in the troposphere	Vehicle exhaust and certain other fumes. Formed from the combination of reactive organic gases and oxides of nitrogen in the presences of sunlight.	Eye and throat irritation, coughing, respiratory tract problems, asthma, lung damage.	Plant and ecosystem damage.
Lead	Metallic element	Metal refineries, lead smelters, battery manufacturers, iron and steel producers and use of leaded fuels by racing and aircraft industries.	Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer, lowered IQ	Affects animal and plants, affects aquatic ecosystems.
Particulate Matter	Very small particles of dust, soot, or other matter, including tiny droplets of liquids	Diesel engines, power plants, industries, windblown dust, wood stoves.	Eye irritation, asthma, bronchitis, lung damage, cancer, heavy metal poisoning, cardiovascular effects.	Visibility impairment, atmospheric deposition, aesthetic building damage, impaired plant photosynthesis.

Source: U.S. Environmental Protection Agency, 2008

Three criteria pollutants are of special concern in the county: ozone, particulate matter, and carbon monoxide.

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Attainment Status for Criteria Air Pollutants

Both the federal and state clean air laws require the identification and designation of areas that either do or do not meet ambient air quality standards. An attainment designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A non-attainment designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation(s) was caused by an exceptional event, as defined in the criteria. Areas for which there is insufficient data available are designated unclassified.

Under the Federal Clean Air Act, Mendocino County has been designated attainment or unclassified for all national ambient air quality standards. Under the California Clean Air Act, the Air Basin is designated nonattainment for the California ambient air quality standard for particulate matter (PM₁₀). Specifically, the Air Basin is designated nonattainment for two air quality standards, state PM₁₀ annual average and state PM₁₀ 24-hour average (MCAQMD, 2008). However, as noted above in **Table 4.3-1**, the county has only experienced one day between 2004 and 2007 where state standards were exceeded.

Ozone

Ozone is not emitted directly into the air; rather, it is formed through a complex series of chemical reactions between reactive organic gases (ROG) and nitrogen oxides (NO_x). These reactions occur over time in the presence of sunlight and heat. Ground-level ozone, commonly referred to as smog, is greatest on warm, windless, sunny days. Ozone is a public health concern because it is a respiratory irritant that increases susceptibility to respiratory infections and diseases, and because it can harm lung tissue at high concentrations. In addition, ozone can cause substantial damage to leaf tissues of crops and natural vegetation, and it can damage many natural and manmade materials by acting as a chemical oxidizing agent. The principal sources of the ozone precursors (ROG and NO_x) are the combustion of fuels and the evaporation of solvents, paints, and fuels.

Particulate Matter (PM)

Particulates are solid or liquid particles, including smoke, dust, aerosols, and metallic oxides, that are small enough to remain suspended in the air for a long period of time. Particulate matter can be divided into several size fractions. Coarse particles are between 2.5 and 10 microns in diameter and arise primarily from natural processes such as wind-blown dust or soil. Fine particles are less than 2.5 microns in diameter and are produced mostly from combustion or burning activities. Fuel burned in cars and trucks, power plants, factories, fireplaces, and wood stoves produces fine particulate matter. Particulate matter resulting from the burning of wood in fireplaces and wood stoves is of particular concern.

The Mendocino County AQMD Particulate Matter Attainment Plan addresses the public health impacts of airborne particulate matter associated with high PM concentrations. The plan states that fine particulate matter is a public health concern because it can bypass the body's natural filtration system more easily than larger particles and can lodge deep in the lungs. The health effects vary depending on a variety of factors, including the type and size of particles. Research has demonstrated a correlation between high PM concentrations and increased mortality rates. Elevated PM concentrations can also aggravate chronic respiratory illnesses such as bronchitis and asthma. Asthma in Mendocino County has been shown to exceed the statewide asthma prevalence rate for adults and the overall (both children and adults) statewide rate. However, Mendocino County is below the statewide rate for childhood asthma.

Carbon Monoxide

Carbon monoxide (CO) is an odorless, colorless gas that is formed by the incomplete combustion of fuels. Motor vehicle emissions are the predominant source of CO. At high concentrations, CO reduces the oxygen-carrying capacity of the blood and can cause dizziness, headaches, unconsciousness, and even death. CO can also aggravate cardiovascular disease. Relatively low concentrations of CO can significantly affect the amount of oxygen in the bloodstream, because CO binds to hemoglobin 220–245 times more strongly than oxygen. CO emissions and ambient concentrations have decreased significantly in recent years. These improvements are due largely to the introduction of cleaner burning motor vehicles and motor vehicle fuels (California Air Resources Board, 1996).

Toxic Air Contaminants (TACs)

A toxic air contaminant (TAC) is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness or that may pose a health hazard. CARB works in partnership with the local air districts to enforce regulations that reduce emissions of TACs throughout the state. CARB identifies the TACs, researches prevention or reduction methods, adopts standards for control, and enforces the standards. CARB has designated almost 200 compounds as TACs, including benzene, formaldehyde, and perchloroethylene. Particulate matter emissions from diesel-fueled vehicles and engines are the primary TACs of concern for mobile sources. Of all controlled TACs, diesel-exhaust particulate matter emissions are estimated to be responsible for about 70 percent of the total ambient TAC risk. CARB has made the reduction of the public's exposure to diesel-exhaust particulate matter one of its highest priorities, with an aggressive plan to require cleaner diesel fuel and cleaner diesel engines and vehicles (California Air Resources Board, 2005).

All projects that require air quality permits from the Air Quality Management District (AQMD) are evaluated for TAC emissions. The AQMD limits emissions and public exposure to TACs through a number of programs. The AQMD prioritizes TAC-emitting stationary sources, based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. The AQMD requires a comprehensive health risk assessment for facilities that are classified in the significant-risk category, pursuant to Assembly Bill 2588. No major stationary sources of TACs were identified within Mendocino County (California Air Resources Board, 2007).

Diesel Exhaust/Land Use Issues

In 1998, after a 10-year scientific assessment process, the California Air Resources Board identified particulate matter from diesel-fueled engines as a toxic air contaminant. Unlike criteria pollutants like carbon monoxide, TACs do not have ambient air quality standards. Since no safe levels of TACs can be determined, there are no air quality standards for TACs. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. Two types of risk are usually assessed: chronic non-cancer risk and acute non-cancer risk. Diesel particulate has been identified as a carcinogenic material but is not considered to have acute non-cancer risks. The state has begun a program of identifying and reducing risks associated with particulate matter emissions from diesel-fueled vehicles. In September 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan is to reduce diesel PM emissions and the associated health risk by 75 percent in 2010 and 85 percent by 2020. The plan consists of new regulatory standards for all new on-road, off-road, and stationary diesel-fueled engines and vehicles, new retrofit requirements for existing on-road, off-road, and stationary diesel-fueled engines and vehicles, and new diesel fuel regulations to reduce the sulfur content

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of diesel fuel as required by advanced diesel emission control systems. Land uses where individuals could be exposed to high levels of diesel exhaust include:

- Warehouses.
- Schools with high volume of bus traffic.
- High volume highways.
- High volume arterials and local roadways with high level of diesel traffic.

Mendocino County public schools include 62 elementary, middle, and high schools. Additionally, there are 18 private schools in the county. Many of the schools in the county have high volumes of bus traffic during daily morning and afternoon operations, which contribute to diesel emissions in the county. High volume highways in Mendocino County include Interstate 101, which has a high volume of daily truck traffic. Trucks are considered major sources of diesel-related emissions. Railroads are also potential sources of diesel-related emissions.

Wood Smoke

Wood smoke has long been identified as a significant source of pollutants in urban and suburban areas. Wood smoke contributes to particulate matter and carbon monoxide concentrations, reduces visibility, and contains numerous toxic air contaminants. Present controls on this source include the adoption of emission standards for wood stoves and fireplace inserts. In December 2006, MCAQMD adopted regulations for the use of wood burning devices. Please refer to the Regulatory Framework subsection for a more detailed description of these regulations.

Air Quality Status in Sub-Basins of Mendocino County

MCAQMD, for the purpose of providing background information for CEQA documents on specific projects, divides the county into air sub-basins. Each of the sub-basins located within Mendocino County is described below, along with air quality characteristics as described by the AQMD. It should be noted that since the county is designated nonattainment for the state PM₁₀ standard, each sub-basin is also designated as nonattainment for that standard (MCAQMD, 2003).

South Coast (Navarro River to Gualala)

The South Coast area includes the city of Point Arena and the communities of Gualala, Elk, Manchester, and Anchor Bay. The South Coast primarily consists of low-density residential development and forest land, with significant areas of parkland and a small amount of agricultural land. There is minimal industrial development. State Route (SR) 1, largely two lanes, serves as the main transportation corridor in the area and passes through every community in the South Coast area. Nearly all traffic in the area is dependent on SR 1, as east-west connections are virtually nonexistent. The heaviest traffic typically occurs during summer weekends and special events. The primary manmade sources of PM₁₀ pollution in the area are wood combustion (woodstoves, fireplaces, and outdoor burning) and fugitive dust. The MCAQMD has no monitoring equipment in the South Coast area.

North Coast (Navarro River to Humboldt County Line)

The North Coast area includes the urbanized area of Fort Bragg and the communities of Mendocino, Albion, Westport, Rockport, Inglenook, and Caspar. The North Coast area consists of the urbanized area of Fort Bragg/Caspar/Mendocino, an approximately 15-mile urbanized strip along SR 1, the SR 1 corridor north of Fort Bragg, and the Lost Coast area north of Rockport. Development in the area from Fort Bragg to Mendocino is typically low- to moderate-density, visitor-serving commercial. SR 1 is the primary transportation corridor, with SRs 20 and 128 providing links to eastern areas. Traffic congestion can be extreme during summer weekends, especially when special events are held. Moderate industrial development exists in Fort Bragg. Development along SR 1 north of Fort Bragg is a much lower density and more typical of the development pattern in the South Coast. The Lost Coast area is largely undeveloped. There is no paved road access to this area, and most land is held in large parcels. The primary manmade sources of PM₁₀ pollution in the area are wood combustion, fugitive dust, automobile traffic, and industry. The MCAQMD maintains PM₁₀ monitoring equipment in Fort Bragg.

Ukiah, Willits, and Surrounding Area (Inland South)

This area includes the cities of Ukiah and Willits as well as many unincorporated communities such as Hopland and Capella. Redwood Valley and Potter Valley also are included in this area. U.S. Highway 101 (US 101) is the main north/south roadway, and SR 20 is the main east/west connector. US 101 varies between a divided highway, freeway, and two-lane streets in this area. Currently, US 101 serves as the "main street" for Hopland and Willits; however, bypasses for both areas are in the planning stages (MCAQMD, 2008).

The cities of Ukiah and Willits are moderate to low density communities with a significant amount of industrial development. Traffic volume and circulation problems exist in both cities. In Ukiah, traffic is hampered by a lack of north/south access and the development of shopping centers removed from residential areas. Willits is divided by US 101, which also serves as the sole north/south access route. Both communities have bus service.

Ukiah and Willits have had PM₁₀ exceedances during winter months in the past. The primary sources of PM₁₀ are wood combustion emissions, fugitive dust from construction projects, automobile emissions, and industry. Emissions also result from "pass-through" traffic on US 101. The AQMD has full monitoring stations (NO_x, ozone, CO, and PM₁₀) in Ukiah and Willits. A PM_{2.5} monitor has been established in Ukiah.

Hopland is a rural tourist community with severe traffic congestion on summer weekends. Extensive agriculture in the area leads to frequent conflicts, both in land use and traffic accidents. In addition, the extensive agriculture and frequent inversions can lead to air quality problems resulting from outdoor burning.

Inland Rural Mendocino County

This area includes the communities of Laytonville, Covelo, and Leggett. The area contains no incorporated cities and has a large number of unincorporated communities, areas of very low-density rural development, and resource lands. US 101 provides the only highway access to this area and varies widely from a full freeway to a narrow two-lane highway. SR 162 provides access to Dos Rios and Covelo from US 101. Forest products and other resource industries are established in this area. The primary sources of PM₁₀ emissions are wood combustion, fugitive dust, and automobile traffic. Some automobile emissions are the result of "pass-through" traffic

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on US 101. This area of the county is designated as a nonattainment area for the state PM₁₀ standard.

Anderson Valley

Anderson Valley is a long, relatively narrow valley. The majority of the population is in the Philo-Boonville area. SR 128 runs the length of the valley, while SR 253 links Anderson Valley from Boonville to the Ukiah area. Traffic flow in the valley is generally good with the exception of the Boonville vicinity during special events. The primary manmade sources of PM₁₀ pollution in the area are wood combustion, fugitive dust primarily from agriculture, and automobile traffic. Extensive agricultural activities can result in local air quality problems from grading and open burning. Anderson Valley is subject to winter cold-air inversions. The MCAQMD currently does not monitor air quality in Anderson Valley; however, Anderson Valley is designated as a nonattainment area for the state PM₁₀ standard.

4.3.2 REGULATORY FRAMEWORK

Air quality within the North Coast Air Basin and Mendocino County is regulated by several jurisdictions, including the U.S. Environmental Protection Agency (EPA), California Air Resources Board (CARB), and the MCAQMD. Each of these jurisdictions develops rules, regulations, and policies to attain the goals or directives imposed upon them through legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

FEDERAL

Federal Clean Air Act

The Federal Clean Air Act was signed into law in 1970. Congress substantially amended the Clean Air Act in 1977 and again in 1990. The Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards and to set deadlines for their attainment. Two types of air quality standards have been established: primary standards that protect public health, and secondary standards that protect public welfare from non-health-related adverse effects such as visibility restrictions. These standards identify maximum levels for six "criteria" pollutants, which are considered the maximum levels of background air pollutants considered safe, with an adequate margin of safety. The six criteria pollutants include ozone, carbon monoxide (CO), nitrogen dioxide (NO₂ - a form of NO_x), sulfur dioxide (SO₂ - a form of SO_x), lead, and particulate matter 10 microns in size and smaller (PM₁₀). Recently, the EPA established ambient air quality standards for particulate matter 2.5 microns in size or smaller (PM_{2.5}, or fine particulate matter).

The Federal Clean Air Act also set a long-term goal of improving visibility to achieve natural conditions in selected national parks and wilderness areas, known as Class I areas. In 1999, the EPA issued a regional haze regulation calling on states to establish goals and emission reduction strategies to make initial improvements in visibility at their Class I areas. The Yolla Bolly Middle Eel Wilderness Area, adjacent to the northeastern corner of the county, is a federally recognized Class I air quality area. CARB is currently preparing a Regional Haze Plan (RH Plan) for California demonstrating reasonable progress in reducing haze by 2018, the first benchmark year on the path to natural visibility by 2064.

STATE

California Clean Air Act

The California Clean Air Act of 1988 requires that all air districts in the state endeavor to achieve and maintain California Ambient Air Quality Standards for the criteria pollutants listed in the Federal Clean Air Act. In addition, it establishes air quality standards for other pollutants: sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particle matter. In many cases, the state standards are more stringent than the federal standards. The California Clean Air Act specifies that districts focus particular attention on reducing the emissions from transportation and area-wide emission sources, and the act provides districts with authority to regulate indirect sources. Each district plan is required to either (1) achieve a 5 percent annual reduction, averaged over consecutive three-year periods, in district-wide emissions of each nonattainment pollutant or its precursors, or (2) provide for implementation of all feasible measures to reduce emissions.

The California Air Resources Board, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both state and federal air pollution control programs within the state. In this capacity CARB conducts research, sets state air quality standards, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as aerosols, paints, and barbecues), and commercial equipment. CARB also sets fuel specifications to further reduce vehicular emissions.

Tanner Air Toxics Act

California regulates toxic air contaminants primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). AB 1807, enacted in 1983, established a two-step process of risk identification and risk management to address the potential health effects from toxic air substances. The first step is identification of a substance as a toxic air contaminant (TAC). CARB and the Office of Environmental Health Hazard Assessment participate in this step. In the second step, CARB reviews the emission sources of an identified TAC to determine if regulatory action is necessary to reduce the risk. In 1993, AB 1807 was amended to require the identification of 189 federal hazardous air pollutants as TACs.

AB 2588, enacted in 1987, established the air toxics "Hot Spots" program. This program requires facilities to report their air toxics emissions, to ascertain health risks, and to notify nearby residents of significant risks. In 1992, AB 2588 was amended to require facilities that pose a significant health risk to the community to reduce risk through a risk management plan.

Senate Bill 656

In 2003 the California Legislature enacted Senate Bill 656 to reduce public exposure to PM₁₀ and PM_{2.5}. This legislation required all air districts to review a list of PM control measures compiled by CARB and identify measures that are most appropriate to the region. SB 656 requires CARB to prepare a report by 2009 that describes actions taken to fulfill the requirements of the legislation as well as recommendations for further actions to assist in achieving the state PM standards.

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LOCAL

Mendocino County Air Quality Management District

The Mendocino County AQMD is the regional agency that regulates stationary and portable sources of air pollution within Mendocino County, including its cities. The AQMD's boundaries are the same as Mendocino County's boundaries. Stationary sources of air pollution regulated by the AQMD include those particularly associated with industrial and commercial development, such as factories, service stations, and power generators. Portable sources include items such as generators and air compressors. The District also regulates open outdoor burning, both agricultural and residential.

Particulate Matter Attainment Plan

The Mendocino County AQMD is in attainment for all federal criteria air pollutants and is also in attainment for all state standards except particulate matter less than 10 microns in size (PM_{10}). Districts designated nonattainment for all pollutants except PM_{10} are required to prepare an attainment plan. While the District is not required to prepare a PM_{10} attainment plan, the District is required to prevent significant deterioration of local air quality and make reasonable efforts toward achieving attainment status for all pollutants. In general, "reasonable progress" is defined as a 5 percent reduction in emissions per year, until the standard is attained. The goal of the attainment plan is to provide information on PM levels and its effects on the public and to provide direction from the Mendocino County Air Quality Management District Board to District staff regarding policy options to reduce future PM levels.

Regulation 4.1

Regulation 4.1 was the first recommended control measure from MCAQMD's Particulate Matter Attainment Plan and identified regulations for wood burning devices. The regulations for wood burning devices include the following:

- Only EPA certified devices, or pellet stoves, can be installed in single or two family dwellings in areas that are not part of a major subdivision created after May 5, 2007.
- Pellet fueled devices are not subject to EPA's certification program and therefore are not required to have tags or labels
- The District allows the installation of used devices, provided they are either pellet devices or are EPA certified.
- Multifamily (3 or more attached units), Commercial or Public buildings cannot install new wood burning devices except to replace an existing device.

Regulation 1

MCAQMD's Regulation 1 included permit requirements to control fugitive dust from large non-agricultural grading operations (projects over 1 acre in size).

4.3.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance. An air quality impact is considered significant if implementation of the project would result in any of the following:

- 1) Conflict with or obstruct implementation of the applicable air quality plan.
- 2) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- 3) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
- 4) Expose sensitive receptors to substantial pollutant concentrations and create objectionable odors affecting a substantial number of people.
- 5) An increase in greenhouse gas emissions would be considered significant if the project would result in a substantial increase in emissions due to energy use and/or vehicle miles traveled that cannot be offset by other reductions. (It should be noted that Mendocino County, Mendocino County Air Quality Management District, nor CARB has established significance criteria in relation to greenhouse gas emissions associated with general plans.)

The State CEQA Guidelines state that, where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determination.

METHODOLOGY

The air quality analysis for this EIR is based on land use designations identified in the General Plan Development Element and the projected traffic and residential, commercial, office, and industrial uses. Increases in regional criteria air pollutants were calculated using the URBEMIS 2007 (v9.2.4) computer program (see **Table 4.3-4**). The URBEMIS emission report is included in **Appendix B**. This program estimates criteria pollutants from area and mobile emission sources associated with development projects, based on the specific types of land uses proposed for development. Use of this model for large community-based plans, where specific land uses have not yet been identified, may not fully account for site-specific conditions, but has been used to provide a reasonable estimation of emissions based on typical land use development conditions under the proposed General Plan Update.

IMPACTS AND MITIGATION MEASURES

Consistency with the Mendocino County AQMD Particulate Matter Attainment Plan

Impact 4.3.1 Subsequent land use activities associated with implementation of the proposed General Plan Update could result in emissions greater than the

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standards identified by the 2005 Mendocino County AQMD Particulate Matter Attainment Plan. This impact is considered to be **less than significant**.

The County's land use authority in planning, zoning, and permitting can be a very effective tool to minimize air pollutant emissions and associated health risks. The change in existing land use designations may or may not, depending on the change, conflict with the local air district's air quality attainment plan. For instance, if subsequent land use activities associated with implementation of the General Plan Update result in the increase of stationary or mobile pollutant emissions above those analyzed in the local air quality attainment plan, the General Plan may be in conflict with the attainment plan and result in an environmental impact according to CEQA standards of significance. Generally, an increase in the amount of acreage or density for residential land use designations results in the increase of the potential population of a jurisdiction. Based on actual and expected growth trends, the unincorporated population may reach 77,160 by the year 2030, an increase of 15,170 over the current population, based on a historical growth rate of 1 percent.

The difference in population, housing units, employment, and continuation of agricultural and resource extraction uses in the county between existing conditions and anticipated year 2030 conditions may result in an exceedance of the data used to formulate the Mendocino County AQMD Particulate Matter Attainment Plan and its PM₁₀ reduction predictions and mitigations. However, the Particulate Matter Attainment Plan and its PM₁₀ reduction predictions and mitigations are based in part on the population and growth projections of the 1981 General Plan, which has a buildout population projection of 134,535. The Particulate Matter Attainment Plan uses the emission inventory and associated emissions projections developed jointly by the California Air Pollution Control and Air Quality Management Districts and the California Air Resources Board (CARB). Since the Particulate Matter Attainment Plan is based in part on the population and growth projection of the 1981 General Plan, it is unlikely that the minor changes to land use designations proposed by the 2030 General Plan Update would result in conflicts with the Particulate Matter Attainment Plan or result in the delayed attainment of air quality standards for the Mendocino County AQMD area.

Mendocino County Code Sections that Provide Mitigation

There are currently no ordinances or codes that provide mitigation for potential conflicts with air quality attainment plans.

Proposed General Plan Policies and Action Items that Provide Mitigation

Policy RM-27 states that the County shall work to maintain "attainment status," where feasible, for state and federal air quality standards which are currently met, and toward attainment for currently exceeded standards, such as PM₁₀. This policy would result in the coordination with the Mendocino County AQMD through the environmental review process to ensure that proposed projects would not significantly affect the region's ability to meet state and federal air quality standards.

Policy RM-29 states that public and private development shall not exceed Mendocino County Air Quality Management District emissions standards. Associated Action Item RM-29.4 further recognizes the AQMD Particulate Matter Attainment Plan by ensuring participation in regional planning activities in order to maintain air quality goals and standards.

Policy RM-30 states that the County shall work to reduce or mitigate particulate matter (PM₁₀) emissions resulting from development, including emissions from wood-burning devices. Wood-

burning devices are a common producer of PM₁₀ and such a policy supports the goal of attainment status.

Action Item RM-35.1 strictly applies AQMD dust control standards to all applicable development.

The proposed General Plan policies and action items would assist in the improvement of air quality conditions. Subsequent land use activities associated with implementation of the proposed General Plan Update would not allow for growth that is not anticipated in the Particulate Matter Attainment Plan. As such, the General Plan Update would not conflict with the Particulate Matter Attainment Plan. Thus, this impact is considered **less than significant**.

Mitigation Measures

None required.

Short-Term Emissions from Grading and Construction

Impact 4.3.2 Subsequent land use activities associated with implementation of the proposed General Plan may result in short-term emissions generated by construction and demolition activities that would affect local air quality and could result in health and nuisance-type impacts in the immediate vicinity of individual construction sites as well as contribute to particulate matter and regional ozone impacts. This is considered a **significant** impact to air quality.

Construction and demolition emissions are generally short-term or temporary in duration; however, they still have the potential to significantly impact air quality. The main contributors to this short-term adverse impact to air quality are fugitive dust emissions (PM₁₀), for which Mendocino County is in nonattainment for the California ambient air quality standard, and emission of ozone forming gases ROG and NO_x. Fugitive dust emissions are generally associated with grading, movement of soil, and other site preparation activities. ROG and NO_x emissions break down to form ozone and are associated primarily with gas and diesel equipment exhaust and the application of various exterior building coatings.

Based on a historical growth rate of 1 percent, it has been projected that the number of dwelling units may reach 34,510 by the year 2030, an increase of 6,785 over the current number. This development, along with the supporting infrastructure, would generate increased emissions of ROG, NO_x, and PM₁₀. Construction activities would include grading, building demolition, building construction, and paving. Wind erosion and disturbance to exposed areas would also be sources of dust emissions. In addition, motor vehicle exhaust associated with construction equipment and construction personnel commuter trips, and material transport and delivery, would contribute to the generation of ROG, NO_x, and PM₁₀. These types of emissions would also occur as part of construction activities associated with agricultural activities in the county.

Mendocino County Code Sections that Provide Mitigation

There are currently no ordinances or codes that provide mitigation for potential conflicts with construction air quality emissions.

Proposed General Plan Policies and Action Items that Provide Mitigation

Policy RM-29 mandates that both public and private development shall not exceed Mendocino County Air Quality Management District emissions standards. Action Item RM-29.3 provides a

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mechanism to refer complaints about fumes, smoke, dust, and other potential stationary or non-point airborne pollutants to Mendocino County Air Quality Management District for investigation.

Policy RM-35 requires development to reduce the effects of earth-moving, grading, clearing, and construction activities on air quality. Action Item RM-35.1 would strictly apply Mendocino County AQMD dust control standards to all applicable development.

Action Item RM-41.1 ensures that the County shall work with the Mendocino County Air Quality Management District to enforce standards for development within areas likely to contain naturally occurring asbestos, including road construction, surface mining, and grading operations.

Implementation of the above General Plan policies and action items would reduce potential construction-related air quality impacts. However, these policies and action items would not fully offset air pollutant emissions resulting from construction activities. Thus, this impact is considered **significant and unavoidable**.

Mitigation Measures

None available.

Operational Air Pollutants

Impact 4.3.3 Negative air quality impacts associated with long-term emissions from projected growth over the planning horizon of the General Plan Update may result in violations of ambient air quality standards or create significant nuisance impacts (e.g., wood smoke). This is considered a **significant** impact.

Subsequent land use activities associated with implementation of the proposed General Plan may result in an increase in population. This increase would introduce additional mobile and stationary sources of emissions, which would adversely affect regional air quality. The county is designated nonattainment for the California PM₁₀ standard. Principal sources of PM₁₀ include fuel burned in cars and trucks, power plants, factories, fireplaces, agricultural activities, and wood stoves. Implementation of the proposed General Plan would result in increased regional emissions of PM₁₀ as well as ROG, NO_x, and CO due to increased use of motor vehicles, natural gas, burning activities, maintenance equipment, and various consumer products, thereby increasing potential operational air quality impacts.

Increases in operational air impacts with implementation of the proposed General Plan Update would generally consist of two sources: stationary and mobile.

- A stationary source of air pollution refers to an emission source that does not move (e.g., utilities facilities). Often, stationary sources are defined as large emitters that release relatively consistent qualities and quantities of pollutants. The term "area source" is used to describe the many smaller stationary sources located together whose individual emissions may be low, but whose collective emissions can be significant. Typically, area sources are those that emit less than 25 tons per year of any combination of hazardous air pollutants or less than 10 tons per year of any single hazardous air pollutant.
- A mobile source of air pollution refers to a source that is capable of moving under its own power. In general, mobile sources imply on-road transportation, but there is also a non-

road or off-road category that includes gas-powered lawn tools and mowers, farm and construction equipment, recreational vehicles, boats, planes, and trains.

An increasing population produces increases in services that can intensify stationary source air emissions. Implementation of the proposed General Plan would result in an increase in population and operational air pollution impacts beyond current day levels. While a portion of the operational impacts are related to stationary sources, as discussed below, the highest increases of PM₁₀ are anticipated to come from mobile (vehicles) sources.

An URBEMIS 2007 (Version 9.2.4) analysis was completed to illustrate the maximum daily area source and operational emissions emitted in 2008. **Table 4.3-4** contains estimated maximum daily operational emissions based on existing development.

TABLE 4.3-4
ESTIMATED UNMITIGATED AIR QUALITY EMISSIONS, EXISTING CONDITIONS

Total Emissions						
Emission Source	Tons Per Year			Pounds Per Day		
	ROG	NO _x	PM ₁₀	ROG	NO _x	PM ₁₀
Existing 2008 Conditions						
Stationary Source Emissions	589.86	87.14	193.43	2,091.75	361.39	3.95
Operational (vehicle) Emissions	833.06	1,170.12	747.24	4,404.08	5,509.89	4,094.49
Total Emissions (Existing)	1,422.92	1,257.26	940.67	6,495.83	5,871.28	4,098.44

Notes: 1) Mendocino County AQMD provides EMFAC statistics for use with the URBEMIS 2007 air emissions program. Actual emissions will vary depending on how development occurs, the specific types of land uses developed, and emission control measures implemented.

2) Trip Generation Rate is based on the median for all commercial and retail categories identified in the URBEMIS 2007 ver 9.2.4 model.

3) Trip Generation Rate is based on the median for all industrial categories identified in the URBEMIS 2007 ver 9.2.4 model.

Table 4.3-5 illustrates the estimated unmitigated air quality emissions under the proposed General Plan Update. This table depicts the operational emissions profile to potential future emissions at 2030 assuming a 1 percent annual growth rate. It should be noted that these emissions estimates do not include other anticipated sources, including continued agricultural operations and activities.

TABLE 4.3-5
ESTIMATED 2030 UNMITIGATED GENERAL PLAN AIR QUALITY EMISSIONS

Total Projected Annual Emissions Assuming 1 Percent Growth Rate						
Emission Source	Tons Per Year			Pounds Per Day		
	ROG	NO _x	PM ₁₀	ROG	NO _x	PM ₁₀
Stationary Source Emissions	745.44	108.48	240.77	2,664.33	449.82	4.91
Operational (vehicle) Emissions	1,048.69	1,472.82	940.58	5,543.95	6,935.76	5,153.86
Total Emissions	1,794.13	1,581.40	1,181.35	8,208.28	7,385.58	5,158.77

Notes: 1) Mendocino County AQMD provides EMFAC statistics for use with the URBEMIS 2007 air emissions program. Actual emissions will vary depending on how development occurs, the specific types of land uses developed, and emission control measures implemented.

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2) Single-family residential includes Remote Residential (20 & 40 acres), Rural Community, Rural Residential (1, 2, 5 & 10 acres), and Suburban Residential land use designations. Under the Proposed General Plan, housing units are also permitted under Agricultural, Forest Land, and Range Land land use designations.

3) Trip Generation Rate is based on the median for all commercial and retail categories identified in the URBEMIS 2007 ver 9.2.4 model.

4) Trip Generation Rate is based on the median for all industrial categories identified in the URBEMIS 2007 ver 9.2.4 model.

Based on the expected 1 percent growth trend and housing growth projections, potential emissions resulting from this growth scenario are estimated to be 1,794.13 tons of ROG, 1,581.4 tons of NO_x, and 1,181.35 tons of PM₁₀ per year through the year 2030. These projections are only estimates and are not based on actual development in the county over the next 20 years, as it is not possible to determine what this development may be at this time. However, the air emission analysis does identify that a result of development is an increase in air emissions (**Tables 4.3-4 and 4.3-5**). The increase in potential air pollutant emission sources in the county has the possibility to result in continued exceedance of state air quality thresholds. In addition, agricultural and resource extraction uses in the county would also contribute to these emissions.

Motor vehicles are a major source of emissions in Mendocino County. Subsequent land use activities associated with implementation of the proposed General Plan Update is projected to increase the unincorporated county population, which will increase area traffic. Congested intersections, due to increased traffic, lower average speeds, and increased idling times leading to an increase in local carbon monoxide concentrations. CO emissions are expected to decrease per vehicle-mile traveled due to cleaner burning fuels and improved technology. However, an increase in the number of vehicles may work to offset any improvements in CO concentrations. Currently the county is considered to have an unclassified designation for CO by the state (the California Air Resources Board designates an area as unclassified for a pollutant if it finds that the data do not support a designation of attainment or nonattainment). However, considering that the entire State of California is in attainment with CO standards which includes areas with a much greater population than the projected population resulting from the General Plan Update, it can be assumed that the proposed project would not exceed the federal or state CO standards. Therefore the proposed General Plan Update would not contribute to substantial amounts of CO emissions.

Increases in residential development will potentially increase wood smoke associated with new wood-burning fireplaces. This can contribute to existing wood smoke levels during the winter that produce odor and minor nuisance impacts.

Mendocino County Code Sections that Provide Mitigation

There are currently no ordinances or codes that provide mitigation for air quality impacts from operational sources.

Proposed General Plan Policies and Action Items that Provide Mitigation

Policy DE-69 encourages mixed-use development in Mendocino County such as ground-floor commercial and upper-story residential or office uses in "core" areas.

Policy DE-70 encourages infill development in the county through increased densities, reduced setbacks, increased building heights, and joint-use parking.

Policy DE-71 focuses new commercial development in the "core" areas of the county.

Policy DE-82 would incorporate green building principles and materials into site designs and facility planning, construction, and operations, which could potentially reduce energy consumption and thus operational emissions.

Policy DE-89 would require that all new developments include tree-lined streets and/or other vegetative treatments that enhance the visual or environmental aspects of the development, thus promoting pedestrian and bicycle transportation and reducing dependence on the automobile.

Policy DE-92 promotes bicycle and pedestrian connectivity between land uses, including residential, schools, commercial and job centers, and open space.

Policy DE-145 provides pedestrian and bicycle ways along public roadway systems consistent with the community area.

Policy DE-147 mandates the connection of bicycle and trail routes to form local and regional networks as well as linking pedestrian, bicycle, and trail routes with other transportation modes to maximize local and regional non-motorized transportation.

Action Item DE-151.1 seeks development standards that facilitate public transit and alternative transportation modes within multi-modal transportation corridors, thus reducing dependence on the automobile.

Policy DE-154 states that the use of public transit and multi-modal transportation systems in community areas should be emphasized.

Policy RM-30 states that the County shall work to reduce or mitigate particulate matter (PM₁₀) emissions resulting from development, including emissions from wood-burning devices.

Policy RM-31 encourages the use of heating devices that reduce particulate emissions.

Policy RM-32 prohibits the installation of open wood-burning fireplaces in new development. Action Item RM-32.1 encourages the Mendocino County AQMD to create incentive programs to install or retrofit Environmental Protection Agency EPA-certified wood-burning devices or natural gas fireplaces in place of traditional fireplaces and older wood-burning devices.

Policy RM-37 mandates that new development be focused within and around community areas to reduce vehicle travel.

Action Item RM-40.1 urges the Mendocino County AQMD to create incentive programs for local businesses to retrofit or modify facilities, vehicles, and equipment in order to reduce diesel exhaust and ozone precursor emissions.

Implementation of proposed General Plan Update policies and action items DE-69, DE-70, DE-71, DE-82, DE-89, DE-92, DE-128, DE-145, DE-147, DE-151.1, DE-154, RM-30, RM-31, RM-32, RM-32.1, RM-37, and RM-40.1, would reduce potential mobile and stationary source air quality impacts. While the proposed policies and action items would assist in reducing the stationary and mobile air quality impacts generated by subsequent land use activities associated with implementation of the General Plan Update, they would not offset these pollution increases. For these reasons, the impact is considered **significant and unavoidable**.

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Mitigation Measures

None available.

Exposure to Toxic Air Contaminants

Impact 4.3.4 Subsequent land use activities associated with implementation of the proposed General Plan Update may result in projects that would include sources of toxic air contaminants which may affect surrounding land uses and/or place sensitive land uses near existing sources toxic air contaminants. This impact is considered a **significant** impact.

Subsequent land use activities associated with implementation of the proposed General Plan Update could potentially include land uses that are potential sources of toxic air contaminants (TACs). The type and level of TACs are dependent on the nature of the land use, individual facilities, and the methods and operations of particular facilities. **Table 4.3-6** below displays potential sources of TAC emissions for various land uses that could potentially be implemented under the General Plan. Diesel exhaust particulate was recently added to the California Air Resources Board (CARB) list of TACs. Activities involving long-term use of diesel-powered equipment and heavy-duty trucks contribute significantly to TAC levels.

**TABLE 4.3-6
TOXIC AIR EMISSION BY LAND USE**

Land Use	Toxic Air Emission
Auto Body Shop	Benzene, Toluene, Xylene
Auto Machine Shop	Asbestos
Chemical Manufacturing	Ethylene, Dichloride, Asbestos
Dry Cleaner	Perchloroethylene (Phased out in 2011)
Electrical Manufacturing	Polychlorinated Biphenyls (PCBs), Cadmium, Chromium, Nickel
Gasoline Station	Benzene
Hospital	Dioxin, Cadmium, Ethylene Oxide
Medical Equipment Sterilization	Ethylene Oxide
Printing Services	Ethyl Benzene, Ethylene Glycol, Xylene
Wastewater Treatment	Benzene, Carbon Tetrachloride, Ethylene Dichloride, Chloroform

Stationary Sources

Direct emissions are released from stationary sources, usually industrial in nature. Because of the great variation in emissions types and amounts from different industrial uses, it is not possible to predict direct emissions. The Mendocino County AQMD has statutory authority over stationary sources of emissions. The District issues permits to ensure that all equipment and processes comply with federal and state laws and regulations and District rules. Before a stationary source is built, erected, or operated, a permit to do so must be obtained from the District. Air quality permits are, in effect, a contract between the District and stationary sources that sets limits on emissions and requires compliance with all District, state, and federal regulations in order to

protect public health. The District's rules and regulations impose limits on emissions and require the use of Best Available Control Technology (BACT) for sources exceeding certain emission levels. These regulations include the identification and quantification of emissions of toxic air contaminants and, if warranted, estimation of cancer and non-cancer risk associated with any source. The permitting process was instigated to assist the controlling of air pollutants by stationary sources and is intended to ensure that these air emissions do not harm public health.

The issuance of Mendocino County AQMD air quality permits, compliance with all District, state and federal regulations regarding stationary and TACs, and the use of Best Available Control Technology reduce potential stationary sources toxic air emissions. Therefore, the General Plan's potential stationary TAC impacts are considered less than significant.

Mobile Sources

Mobile sources of TAC emissions in Mendocino County are primarily associated with the operation of school buses and diesel-powered delivery trucks associated with roadways and commercial, retail, and industrial uses.

Emissions from school buses can vary depending on various factors, including bus type, age, and maintenance, and the amount of time spent idling. Health impacts from exhaust exposure include eye and respiratory irritation, enhanced respiratory allergic reactions, asthma exacerbation, increased cancer risk, and immune system degradation. Generally, children are more vulnerable to air pollutants because of their higher inhalation rates, narrower airways, and less mature immune systems.

In response to the above issue, CARB adopted an Airborne Toxics Control Measure (ATCM) as part of the Particulate Matter Risk Reduction Plan to specifically deal with diesel emissions from school buses. This measure became effective July 16, 2003. The school bus-idling ATCM includes the following requirements:

- a) The driver of a school bus or vehicle, transit bus, or heavy-duty vehicle (other than a bus) shall manually turn off the bus or vehicle upon arriving at a school and shall restart no more than 30 seconds before departing. A driver of a school bus or vehicle shall be subject to the same requirement when operating within 100 feet of a school and shall be prohibited from idling more than five minutes at each stop beyond schools, such as parking or maintenance facilities, school bus stops, or school activity destinations. A driver of a transit bus or heavy-duty vehicle (other than a bus) shall be prohibited from idling more than five minutes at each stop within 100 feet of a school. Idling necessary for health, safety, or operational concerns shall be exempt from these restrictions.
- b) The motor carrier of the affected bus or vehicle shall ensure that drivers are informed of the idling requirements, track complaints and enforcement actions, and keep track of driver education and tracking activities. According to CARB, implementation of the above requirements would eliminate unnecessary idling for school buses and other heavy-duty vehicles, thus reducing localized exposure to TAC emissions and other harmful air pollution emissions at and near schools and protecting children from unhealthy exhaust emissions.

In addition to the school bus-idling ATCM, CARB adopted an idling-restriction ATCM for large commercial diesel-powered vehicles that 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. CARB is currently evaluating additional ATCMs intended to further reduce

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TACs associated with commercial operations, including a similar requirement to limit idling of smaller diesel-powered commercial vehicles. However, these provisions do not address diesel emissions for truck traffic along roadways in the unincorporated portions of the county.

While these measures will reduce the amount of TACs associated with diesel-powered vehicles, determination of the potential air quality impacts due to the emission of TACs by commercial diesel-powered trucks cannot be ascertained given the size and scope of land use changes with implementation of the proposed General Plan and the uncertainty of future development types. As a result, exposure of sensitive receptors to mobile-source TACs would be considered a potentially significant impact.

Short-term Construction Sources

Implementation of the proposed General Plan Update would result in the potential construction of a variety of projects. This construction would result in short-term emissions of diesel exhaust from on-site heavy duty equipment. Particulate exhaust emissions from diesel-fueled engines (diesel PM) were identified as a TAC by CARB in 1998. Construction would result in the generation of diesel PM emissions from the use of off-road diesel equipment required for site grading and excavation, paving, and other construction activities. The amount to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). The use of construction equipment would be temporary in nature.

Airports

There are six public use general aviation airports in Mendocino County: Ukiah Municipal Airport, Ells Field in Willits, Round Valley Airport near Covelo, Little River Airport between Albion and Mendocino, Boonville Airport, and Ocean Ridge Airport near Gualala. The aviation system is composed of the airports, privately owned aircraft of various types, privately operated aircraft service facilities, and publicly and privately operated airport service facilities. Most aircraft are privately owned, small, single- or twin-engine planes flown primarily for personal business.

Sources of airport-related TAC emissions include aircraft (e.g., air carriers, commuter and cargo aircraft, and general aviation), ground-service equipment, fuel storage and handling, and other sources. TACs released by these sources include but are not limited to VOCs (acetaldehyde, formaldehyde, benzene, and 1, 3-butadiene), chromium, dioxins, polycyclic organic compounds (PAHs), tetrachloroethylene, nickel, and toluene.

Studies conducted for Chicago's O'Hare Airport identified that the cancer risks associated with operations at the airport exceed 10 in 1 million over an area of approximately 40 square miles and 1 in 1 million over an area of approximately 1,000 square miles, assuming 70 years of exposure (KM Chng Environmental, 1999). Additionally, in 2000, the Illinois EPA monitored TAC emissions in the vicinity of O'Hare Airport as well as other locations in the Chicago area from June to December, focusing on toxic compounds identified in EPA's national strategy and on mobile-source emissions associated with airport operations (Illinois Environmental Protection Agency 2002). A review and analysis of the accumulated monitoring results found that the levels of toxic compounds (e.g., acetaldehyde and formaldehyde) attributable to airport operations were detected at monitoring sites. However, the concentrations of such compounds were indistinguishable from (or lower than) typical urban background levels.

Based on the above discussion, it can be ascertained that larger airports have the potential to expose sensitive receptors to TAC emissions to an extent that health risks could result. However,

the airports found within Mendocino County are considerably smaller in size compared to O'Hare International Airport. Therefore, this impact is considered less than significant.

Mendocino County Code Sections that Provide Mitigation

There are currently no ordinances or codes that provide mitigation for air quality impacts from sources of toxic air contaminants.

Proposed General Plan Policies and Action Items that Provide Mitigation

Policy RM-38 encourages the use of alternative fuels, alternative energy sources, and advanced technologies that result in fewer airborne pollutants. This strategy has the potential to reduce the emission of TACs by commercial diesel-powered trucks.

Policy RM-39 seeks to reduce or eliminate exposure of persons, especially sensitive populations, to state-regulated air toxics.

Policy RM-40 will minimize the exposure of sensitive uses, such as residences, schools, day care, group homes, or medical facilities to industrial uses, transportation facilities, or other sources of state-regulated air toxics through the planning review process.

Action Item RM-40.1 urges the Mendocino County Air Quality Management District to create incentive programs for local businesses to retrofit or modify facilities, vehicles, and equipment to reduce diesel exhaust, a source of TACs.

Implementation of proposed General Plan Update policies RM-38, RM-39, RM-40, and action item RM-40.1 would reduce potential stationary, mobile, and construction TAC source impacts. However, these policies and action items would not fully offset TAC source emissions or exposure from mobile sources from roadways. Thus, this impact is considered **significant and unavoidable**.

Mitigation Measures

None available.

Odors

Impact 4.3.5 Subsequent land use activities associated with implementation of the proposed General Plan Update could include sources that would expose sensitive receptors to construction and long-term odorous emissions. This impact is considered **less than significant**.

Subsequent land use activities associated with implementation of the proposed General Plan Update could allow for the development of uses that have the potential to produce odorous emissions either during the construction or operation of future development. Additionally, subsequent land use activities may allow for the construction of sensitive land uses (i.e., residential development, schools, parks, offices, etc.) near existing or future sources of odorous emissions.

Future construction activities could result in odorous emissions from diesel exhaust associated with construction equipment. However, because of the temporary nature of these emissions and the highly diffusive properties of diesel exhaust, exposure to this emission of sensitive receptors would be limited.

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MCAQMD has adopted a nuisance rule that addresses the exposure of "nuisance or annoyance" air contaminant discharges. Rule 1-400 states that no person shall discharge from any source whatsoever such quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons, or to the public, or that endanger the comfort, repose, health, or safety of any such persons, or the public, or that cause to have a natural tendency to cause injury or damage to business or property (MCAQMD, Regulations). The provisions of Rule 1-400 do not apply to odors emanating from agricultural operations necessary for the growing of crops or raising of fowl or animals. If public complaints are sufficient to cause the odor source to be considered a public nuisance, then MCAQMD can require the identified source to incorporate mitigation measures to correct the nuisance condition.

Mendocino County Code Sections that Provide Mitigation

There are currently no ordinances or codes that provide mitigation for exposure from sources of odorous emissions.

Proposed General Plan Policies and Action Items that Provide Mitigation

Action Item RM-29.3 provides a mechanism to refer complaints about fumes, smoke, dust, and other potential stationary or non-point airborne pollutants to Mendocino County Air Quality Management District for investigation.

Policy RM-40 will minimize the exposure of sensitive uses, such as residences, schools, day care, group homes, or medical facilities to industrial uses, transportation facilities, or other sources of state-regulated air toxics through the planning review process.

Policy RM-103 states that potential conflicts related to odors and other issues shall be mitigated by each new discretionary project.

Implementation of the proposed General Plan policies and action items listed above require the protection of sensitive receptors from incompatible land uses. Therefore, this impact is considered **less than significant**.

REFERENCES

- California Air Resources Board. 1996. *Final Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas*. Sacramento, California.
- California Air Resources Board. 2002. *Proposed Methodology to Model Carbon Dioxide Emissions and Estimate Fuel Economy*.
<http://www.arb.ca.gov/msei/onroad/downloads/pubs/co2final.pdf>. Accessed June 2007.
- California Air Resources Board. 2005. *Air Quality and Land Use Handbook*. Sacramento, California.
- California Air Resources Board. 2007. Community Health Air Pollution Information System. URL: http://www.arb.ca.gov/gismo/chapis_v01_6_1_04/chapis_v02.asp. Accessed June 20, 2007.
- California Air Resources Board. 2008. Air Resources Board Website. <http://www.arb.ca.gov/planning/reghaze/reghaze.htm>. Accessed August 7, 2008.
- California Climate Action Registry. 2006 (June). *California Climate Action Registry General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions*. Version 2.1. Los Angeles, CA. <http://www.climateregistry.org/docs/PROTOCOLS/GRP%20V2.1.pdf>. Accessed June 2007.
- California Department of Finance. 2008. *E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2008*. Accessed July 31, 2008. Available at <http://www.dof.ca.gov/Research/Research.php>
- California Department of Transportation (Caltrans). December 2006. *Climate Action Program at Caltrans*. Sacramento, CA. Available at <http://www.dot.ca.gov/docs/ClimateReport.pdf>
- California Energy Commission. 2006a. *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004*. Publication CEC-600-2006-013-D. <http://www.energy.ca.gov/2006publications/CEC-600-2006-013/CEC-600-2006-013-SF.PDF>. Accessed June 2007.
- California Energy Commission. 2006b. *Climate Change Portal*. <http://www.climatechange.ca.gov>. Last update December 22, 2006. Accessed January 2008.
- California Energy Commission. 2006c. (July) *Our Changing Climate: Assessing the Risks to California*. Publication CEC-500-2006-077.
- California Environmental Protection Agency. 2007. *FAQS Frequently Asked Questions About Global Climate Change*. Available at: <http://www.climatechange.ca.gov/background/faqs.html>
- California Environmental Protection Agency. 2007. *2006 State Area Designation Maps*. Effective as of July 26, 2008. Accessed July 31, 2008. Available at <http://www.arb.ca.gov/desig/adm/adm.htm>

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- Illinois EPA. 2002. *Chicago O'Hare Airport Air Toxic Monitoring Program, June-December 2000, Final Report Illinois EPA., Bureau of Air.* May 2002.
- Intergovernmental Panel of Climate Change. *National Greenhouse Gas Inventories Programme.* <http://www.ipcc-nggip.iges.or.jp/>. Accessed June 2007.
- Itron. 2007. *California Commercial End User Survey.* Available at: <http://capabilities.itron.com/CeusWeb/Chart.aspx#>
- KM Chng. 1999. *Findings Regarding Source Contribution to Soot Deposition, O'Hare International Airport and Surrounding Communities, prepared for the City of Chicago.* December 1999. KM Chng Report No. 991102.
- Mendocino County Air Quality Management District. 2003. *Air Quality Setting for Environmental Documents.*
- Mendocino County Air Quality Management District. 2008. Regulation 1 – Air Pollution Control Rules. Available at <http://www.co.mendocino.ca.us/aqmd/Regulations.htm>
- Miller, Tyler G. 2000. *Living In the Environment, 11th Edition.* Thomson Learning.
- National Aeronautical and Space Administration. 2007. *NASA Facts Online.* http://www.gsfc.nasa.gov/gsfcservice/gallery/fact_sheets/earthsci/green.htm. Accessed June 2007.
- Sonoma County Water Agency. 2007. Press Release April 12, 2007: *Lake Mendocino Water Supply Projected to Reach Unprecedented Low Levels, Agency Seeks 10-15 Percent Reduction in Water Demand Through Voluntary Water Conservation Efforts.* Available at: <http://www.ci.cotati.ca.us/headline.cfm?AnnouncementID=86> . April 12, 2007
- U.S. Department of Agriculture, Soil Conservation Service. 1991. *Soil Survey of Mendocino County, Eastern Part and Trinity County, Southwestern Part, California.*
- U.S. Department of Agriculture. 2001. *Soil Surveys of Mendocino County, Eastern Part (1991) and Western Part (2001).*
- U.S. Environmental Protection Agency. 2007. *Greenhouse Gas Emissions.* <http://www.epa.gov/climatechange/emissions/index.html>. Accessed July 2008.
- U.S. Environmental Protection Agency. 2008. *Six Common Air Pollutants.* <http://www.epa.gov/air/urbanair/6poll.html>