

## 3.12 Air Quality

This section provides background information regarding air quality within the County, the regulations and programs that relate to air quality, and an assessment of the potential impacts of implementing the proposed General Plan Update. Air quality issues have been identified through the General Plan Update process. The key issues will be discussed in the evaluation of impacts below. The project site is located within North Coast Air Basin (NCAB) which includes all of Humboldt, Del Norte, Trinity, and Mendocino Counties, as well as a portion of Sonoma County (Humboldt County 2007). The North Coast Unified Air Quality Management District (NCUAQMD) regulates air quality in the Humboldt, Del Norte and Trinity County portions of the NCAB, while Mendocino and Sonoma counties have separate air management districts (COE 2008).

Air quality is affected by both the rate and location of pollutant emissions and by meteorological conditions that influence movement and dispersal of pollutants. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients, along with local topography, provide the link between air pollutant emissions and air quality (Humboldt County 2007). In the NCAB, air quality is predominantly influenced by the climatic regimes of the Pacific. In summer, warm ground surfaces draw cool air in from the coast, creating frequent thick fogs along the coast and making northwesterly winds common. In winter, precipitation is high, surface wind directions are highly variable, and weather is more affected by oceanic storm patterns (Humboldt County, 2002). In the City of Eureka, average temperatures range from 46° degrees Fahrenheit in winter to 60° in summer, and average monthly precipitation ranges from 1.0" in summer to 8.0" in winter for total annual precipitation of 40" (U.S. Climate Data, 2016).

As a result of the region's topography and coastal air movements, inversion conditions are common in the NCAB (Humboldt County 2007). Inversions are created when warm air traps cool air near the ground surface and prevents vertical dispersion of air. Valleys, geographic basins, and coastal areas surrounded by higher elevations are the most common locations for inversions to occur. During the summer, inversions are less prominent, and vertical dispersion of the air is good. However, during the cooler months between late fall and early spring, inversions last longer and are more geographically extensive; vertical dispersion is poor, and pollution may be trapped near the ground for several concurrent days (Humboldt County 2007). Existing air quality conditions are described below and in the *Humboldt County Community Analysis Baseline Preparation, 2009*, (available at <http://co.humboldt.ca.us/gpu/documentsPlan.aspx>, incorporated by reference, and summarized below).

### 3.12.1 Air Quality – Environmental Setting

#### Humboldt County Climate

In general, the climate of northern coastal California is characterized by cool summers and mild winters with frequent fog and significant amounts of rain. In coastal areas, the ocean helps to moderate temperatures year-round. Further inland, the summers are hotter and drier and the winters colder and more snowy. At higher elevations in inland areas, it is cooler in the summers and snowier in the winter. The average annual rainfall in the county ranges from 38 inches in Eureka to 141 inches in Honeydew. Approximately 90 percent of the annual precipitation falls between October and April. Higher rainfall in winter often influences high river levels. Winter snowfall is common at higher elevations. The dry season is between May and September (NCUAQMD1995).

Average temperatures on the coast in Eureka range from the low 60s in the summer to the low 40s during the winter. Inland average temperatures, such as in Willow Creek or Hoopa, range from the 90s to the 30s. On the coast, summer fog is common when inland temperatures rise.

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to drive the movement and dispersal of air pollutants. Winds control the rate and dispersion of local pollutant emissions. In the NCAB, dominant winds exhibit a seasonal pattern, especially in coastal areas. In the summer months, strong north to northwesterly winds are common. During the winter, storms from the South Pacific increase the percentage of days with winds from southerly quadrants. Wind direction often assumes a daily pattern in the river canyons that empty into the Pacific. In the morning hours, cool air from higher elevations flows down the valleys while later in the day at lower elevations air heats up and this pattern is reversed as airflow heads up the canyon. These airflows are often quite strong. Offshore and onshore flows are also common along the coast and are associated with pressure systems in the area. Onshore flows frequently bring foggy cool weather to the coast, while offshore flows often blow fog away from the coast and bring sunny, warm days.

Humboldt County commonly experiences two types of inversions, vertical and horizontal, that affect the vertical depth of the atmosphere through which pollutants can be mixed. Vertical air movement is important in spreading pollutants through a thicker layer of air. Horizontal movement is important in spreading pollutants over a wider area. Upward dispersion of pollutants is hindered wherever the atmosphere is stable; that is, where warm air overlies cooler air below.

Radiation inversion occurs when the air layer near the surface of the ground cools and may extend upward several hundred feet. Radiation inversion in Humboldt County is found in the night and early mornings almost daily, but is more prominent from late fall to early spring when there is less sunlight and it is cooler. Radiation inversion tends to last longer into the morning during the winter months than in the summer.

Subsidence inversion is caused by downward moving air aloft, which is common in the area of high pressure along and off the coast. The air warms at a rate of 5.5 degrees Fahrenheit per 1,000 feet as it descends. Thus, it arrives at a lower height warmer than the air just below and limits the vertical mixing of air. Subsidence inversions often affect a large area and are more common during the summer months. These inversions, which usually occur from late spring through the early fall, can be very strong and shallow due to cooling of the lower layers from the cool ocean water.

### **3.12.2 Air Quality - Regulatory Setting**

The State of California and the federal government have established ambient air quality standards for a number of pollutants, which are referred to as criteria pollutants. These standards are categorized as primary standards when designed to safeguard public health, or as secondary standards when they primarily intend to protect crops and to mitigate such effects as reduced visibility, soiling by air particulates, nuisance odors, and other forms of damage. Air quality is also regulated through emissions limits for individual sources of criteria air pollutants.

The Federal Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to identify National Ambient Air Quality Standards. Currently, U.S. EPA has established national standards for the following pollutants, which are criteria air pollutants:

- Suspended particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>).
- Carbon monoxide (CO).
- Ozone (O<sub>3</sub>).
- Nitrogen dioxide (NO<sub>2</sub>).
- Sulfur dioxide (SO<sub>2</sub>).
- Lead (Pb).

The EPA is also involved with improving air quality and management responsibilities, including establishing national ambient air quality standards, requiring that air districts develop air quality plans to meet standards, imposing sanctions when plans are not met, establishing mobile source controls, and developing guideline documents for controlling air emissions.

The California Air Resources Board also has responsibilities that include establishing State air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving State implementation plans.

Pursuant to the California Clean Air Act of 1988, California has adopted stricter ambient air quality standards (relative to federal standards) for the criteria air pollutants, particularly ozone and PM<sub>10</sub> (particulate matter, less than 10 microns in diameter). In addition, California has adopted ambient air quality standards for some pollutants for which there are no corresponding national standards. Table 3.12-1 presents these standards.

The NCUAQMD is responsible for developing air quality plans, monitoring air quality, and reporting air quality data for the North Coast Air Basin. In addition, the NCUAQMD has the following responsibilities: overseeing stationary source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, incentive grants, and reviewing air quality related sections of environmental documents required by the California Environmental Quality Act (CEQA).

**Table 3.12-1. Federal/State Ambient Air Quality Standards**

Pollutant	Federal	State
Ozone	Unclassified/Attainment	Attainment
Sulfur Dioxide	Unclassified	Attainment
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Particulate Matter 2.5 Microns or Smaller (PM <sub>2.5</sub> )	Unclassified/Attainment	Attainment
Particulate Matter 10 Microns or Smaller (PM <sub>10</sub> )	Unclassified	Non-attainment
Sulfates	No Standard	Attainment
Lead	Unclassified/Attainment	Attainment
Hydrogen Sulfide	No Standard	Attainment
Vinyl Chloride	No Standard	Attainment
Carbon Monoxide	Unclassified/Attainment	Attainment

Source: ARB, 2016a

## Criteria Air Pollutants

Air quality monitoring has been conducted in the North Coast Air Basin since 1982 when the NCUAQMD was formed. Monitoring results have shown that the principal pollutant of the North Coast, including Humboldt County, is particulate matter 10 microns or less in diameter, designated as PM<sub>10</sub>. The NCUAQMD is classified as "attainment" for the criteria pollutants of ozone and PM<sub>2.5</sub>, attainment for the federal PM<sub>10</sub> standard, and in "nonattainment" for the State 24-hour particulate (PM<sub>10</sub>) standard.

Health concerns associated with suspended particles focus on those particles small enough to reach the lungs when inhaled. Few particles larger than 10 microns in diameter reach the lungs. Consequently, both federal and State air quality standards for particulate matter have been revised to apply only to these small particles.

As shown in Table 3.12-2, State and federal PM<sub>10</sub> standards have been set for 24-hour and annual averaging times. The State 24-hour PM<sub>10</sub> standard equals 50 micrograms per cubic

**Table 3.12-2. Criteria Pollutant Concentrations in Humboldt County, 2011-2015.**

Pollutant	State Std. <sup>a</sup>	National Std. <sup>a</sup>	Pollutant Concentration by Year <sup>b</sup>				
			2011	2012	2013	2014	2015
<b>Ozone (ROG, NOx, CO)</b>							
Highest 1-hour average (State), ppm	0.09	--	0.047	0.053	0.055	0.049	0.060
Days over State Std. <sup>f</sup>			0	0	0	0	0
Highest 8-hour average (State/national), ppm	0.07 <sup>c</sup>	0.075	0.043/ 0.043	0.049/ 0.048	0.049/ 0.049	0.043/ 0.043	0.053/ 0.052
Days over State Std.			0	0	0	0	0
Days over National Std.			0	0	0	0	0
<b>Respirable Particulate Matter (PM<sub>10</sub>)</b>							
Highest 24-hour average (state national), µg/m <sup>3</sup>	50	150	<b>53.9/</b> 49.6	46.3/ 44.5	<b>66.7/</b> 64.3	ND <sup>d</sup> / 104.7	ND <sup>d</sup> / 54.9
Days over State Std.			6.1	0	11.8	ND <sup>d</sup>	ND <sup>d</sup>
Annual average (State), µg/m <sup>3</sup>	20 <sup>e</sup>	--	19.1	16.8	19.3	ND <sup>d</sup>	ND <sup>d</sup>
<b>Fine Particulate Matter (PM<sub>2.5</sub>)</b>							
Highest 24-hour average, µg/m <sup>3</sup>	--	35	24.8	22.3	28.1	21.2	18.6
Days over National Std.			ND <sup>d</sup>	0	0	0	0
Annual average (National), µg/m <sup>3</sup>	12	15	6.6	6.7	7.1	3.0	4.6

Notes:

**Bold** = in excess of standards

ppm = parts per million; µg/m<sup>3</sup> = micrograms per cubic meter

<sup>a</sup> COE, 2008.

<sup>b</sup> ARB, 2016b (ozone data are from the Eureka-Humboldt Hill monitoring station while PM<sub>10</sub> and PM<sub>2.5</sub> data are from the Eureka-Jacobs and monitoring station).

<sup>c</sup> In 2006, the State approved amendments to the regulations for the State Ambient Air Quality Standard for ozone establishing a new 8-hour average ozone standard of 0.070 parts per million (ppm).

<sup>d</sup> No data available.

<sup>e</sup> The national annual PM<sub>10</sub> standard was revoked in December 2006 (ARB, 2008a).

<sup>f</sup> The national 1-hour ozone standard was revoked in June 2005 (ARB, 2008a).

Source: ARB, 2016b; compiled by ESA.

meter ( $\mu\text{g}/\text{m}^3$ ) and the federal 24-hour standard is  $150 \mu\text{g}/\text{m}^3$ . The State's annual  $\text{PM}_{10}$  standard is  $20 \mu\text{g}/\text{m}^3$ , calculated as an annual geometric mean; in 2006 the national  $\text{PM}_{10}$  annual standard was revoked. State 24-hour  $\text{PM}_{10}$  standards may not be exceeded more than one day per year whereas both annual standards may not be exceeded.

According to the  $\text{PM}_{10}$  Attainment Plan adopted by NCUAQMD (May 11, 1995), Humboldt County's air quality has violated the California  $\text{PM}_{10}$  ambient standard; as a result the district has been classified as a  $\text{PM}_{10}$  non-attainment area. In reporting year 2014, the estimated annual geometric mean  $\text{PM}_{10}$  concentration was  $19.3 \mu\text{g}/\text{m}^3$ , below the  $20.0 \mu\text{g}/\text{m}^3$  standard (ARB, 2016b). The ARB projects Humboldt County to have more  $\text{PM}_{10}$  violations in the future. Humboldt County  $\text{PM}_{10}$  emissions are generated by a variety of sources. The following table shows the estimated percent contribution by source in 2016.

**Table 3.12-3. Annual  $\text{PM}_{10}$  emissions estimated percent contribution by source.**

Source	$\text{PM}_{10}$ Percent of Total
Service and Commercial	<0.1
Other Mobile Sources	0.6
Cooking	0.4
Farming Operations	0.5
Electric Utilities	0.5
Off-Road Equipment	0.5
Mineral Processes	1.1
Fugitive Windblown Dust	1.4
On-Road Vehicles	2.1
Construction And Demolition	3.8
Manufacturing And Industrial	2.0
Ocean Going Vessels	1.3
Wood And Paper	4.5
Paved Road Dust	5.0
Residential Fuel Combustion	7.8
Managed Burning And Disposal	8.6
Unpaved Road Dust	58.2
Service And Commercial	0.1
Other Mobile Sources	1.5
Electric Utilities	0.8
Cogeneration	0.4
Food And Agriculture	0.1
Farming Operations	0.6
Cooking	0.7
Total	100

Source: ARB, 2016c.

Table 3.12-3 shows that unpaved road dust accounts for 58.2 percent of the County's  $\text{PM}_{10}$  emissions), and paved road dust accounts for another 5 percent. Managed burning and disposal is the second highest source of  $\text{PM}_{10}$  emissions in the County at 8.6 percent. Road

dust and managed burning are the two sources that are likely the primary reason for PM<sub>10</sub> violations in the County.

Daily activity on unpaved roads occurs primarily during daylight hours. Activity is assumed to be the same each day of the week. The monthly activity profile is increased during the spring and summer months to account for additional recreational travel and drier, dustier roads. Travel to and from remote cannabis cultivation sites is likely to be another factor. On-road vehicle miles traveled (VMT) is used for the growth parameter to project PM<sub>10</sub> emissions in future years.

The PM<sub>10</sub> Attainment Plan includes control strategies that are intended to achieve the attainment goals that are identified in the Plan. Control strategies include transportation control measures such as encouraging the use of public transit and promoting alternatively powered bus fleets, encouraging car-pooling and bicycle commuting, removal or repair of vehicles with inefficient emission control systems, and traffic flow improvements that reduce idling and VMT. Land use control measures encourage mixed use or more dense development. The PM<sub>10</sub> Attainment Plan also includes restrictions on open burning (residential and non-standard permits), as well as various measures to encourage the installation of EPA certified woodstoves.

### **Toxic Air Contaminants**

Regulation of toxic air contaminants is achieved through federal and State controls on individual sources. Toxic air contaminants are air pollutants with short-term (acute) and/or long-term (chronic or carcinogenic) adverse human health effects, for which no ambient air quality standards have been established. Amendments to the Federal Clean Air Act 1990 offer a comprehensive plan for achieving significant reductions in both mobile and stationary source emissions of certain designated toxic air contaminants.

Additionally, the NCUAQMD administers the Air Toxics Hot Spot program. This program requires preparation of an emissions inventory that identifies the types and kinds of chemicals that can cause human health effects. Next, the inventories are evaluated and ranked according to health risk potential. Those facilities with the highest risk potential must prepare formal health risk assessments.

In 1987, the California State legislature enacted through Assembly Bill 2588 the Air Toxics Hot Spots Information and Assessment Act, which requires companies in California to provide information to the public about emissions of Toxic Air Contaminants (TACs) and their possible impact on public health. Impact is measured as "maximum individual cancer risk" which is the likelihood that a person exposed to concentrations of TACs over a lifetime will develop cancer. The ARB maintains an inventory of stationary sources of TACs. There are several facilities in Humboldt County associated with an increased cancer risk. In unincorporated Humboldt County, the main sources of toxic air contaminants are primarily those who have Title V (CAA) permits with the Air District: (1) Pacific Gas and Electric; (2) DG Fairhaven Power Company (Fairhaven); (3) Eel River Power in Scotia; (4) Blue Lake Power; (5) Freshwater Pulp (formerly Evergreen Pulp, Inc. Samoa-not currently operating), and (4 6) Humboldt Flakeboard Panels.

The ARB regulates toxic air contaminants from stationary sources through a series of regulatory measures called Airborne Toxic Control Measures. Mobile sources of TACs are addressed by the ARB primarily via the Diesel Risk Reduction Program. Local governments, such as cities and counties, play a role in reducing public exposure to TACs by enforcing

zoning ordinances and ensuring proper buffer zones between stationary sources that emit TACs and sensitive receptors located downwind.

Regulation of toxic air contaminants from mobile sources was historically implemented through emissions standards for on-road motor vehicles and through specifications for gasoline and diesel fuel sold in California, rather than through land use decisions, air quality permits, or regulations addressing how the public uses motor vehicles. In 1998, ARB designated diesel exhaust particulate matter from internal combustion engines as a toxic air contaminant (TAC) for cancer. Now land use decisions must include mitigation efforts for heavy-duty diesel equipment operated during construction phases.

NCUAQMD measures PM<sub>10</sub> at sites in Crescent City, Eureka, and Weaverville. There are three locations in Humboldt County where monitoring is conducted, all located in the City of Eureka: Jacobs Street, I Street, and Humboldt Hill. The Jacobs Street and Humboldt Hill air quality stations also monitor for the federal Particulate Matter Standard (PM<sub>2.5</sub>). Data from these monitoring stations indicate that the air quality in Eureka City is improving; PM levels have been reduced to nearly below State standards.

## Odors

Odors are generally regarded as a nuisance or annoyance rather than a health hazard, although individuals can have a strong physical response to specific odors. Odor intensity depends on the concentration of the substance in the air. The ability to detect odors varies considerably among the population. The detection of odors is subjective, where some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. Reactions to odors vary significantly as well.

Land uses in Humboldt County that could represent odor sources include, but are not limited to, agricultural land uses (e.g., manure spreading, fertilizers, and tilling), releases of anaerobic gases from wastewater treatment facilities (i.e., hydrogen sulfide), smoke-borne odors from open-burning (logging slash, construction wastes, and private "burn barrels"), commercial process-related odors (e.g., food and meat processing and beer brewing), and the pulp mill (currently not operating). The NCUAQMD has authority to mitigate odor impacts under California Health and Safety Code Section 41700. Common complaints the air district receives relate to coffee roasters, fish and shellfish drying, and autobody/paint facilities.

## Sensitive Receptors

Sensitive land uses, or sensitive receptors, are people or facilities that generally house people (e.g., residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks) that may experience adverse effects from unhealthful concentrations of air pollutants or odors. People who are most likely to be affected by air pollution include children under 14, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. Local agencies often plan land uses in a manner to separate sensitive receptors from sources of TACs and odors. In April 2005, ARB released the final version of the Air Quality and Land Use Handbook, which encourages local land use agencies to consider the risks from air pollution prior to making decisions that approve the siting of new sensitive receptors (e.g., schools, homes, and daycare centers) near sources of air pollution.

### 3.12.3 Air Quality - Standards of Significance

This analysis uses the significance criteria from the CEQA Guidelines Appendix G. The proposed General Plan Update would result in a significant impact on air quality if it would:

- a) Conflict with or obstruct implementation of the applicable air quality plan.
- b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- c) 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).
- d) Expose sensitive receptors to substantial pollutant concentrations.
- e) Create objectionable odors affecting a substantial number of people.

Items a, b and c are discussed in Impact 3.12.4.1; Item "d" is discussed in Impact 3.12.4.2; Item "e" is discussed in Section 3.12.4.3.

### 3.12.4 Air Quality – Impacts and Mitigation Measures

#### Impact 3.12.4.1. Conflict with Air Quality Plan, Violate Air Quality Standard, Increase Criteria Pollutant in Non-Attainment Status

Implementation of the General Plan Update would result in additional development that could adversely impact air quality by generating air pollution.

This section of impact analysis addresses items a, b, and c of the significance criteria described in Section 3.12.3 above. Based on Appendix G of the CEQA Guidelines the proposed County General Plan Update would have a significant impact if it would:

- a) Conflict with or obstruct implementation of the applicable air quality plan,
- b) Violate an air quality standard, or
- c) Result in the net increase of a criteria pollutant in non-attainment status.

Implementation of the General Plan Update would result in a significant impact if it would include policies that are inconsistent with the PM<sub>10</sub> Attainment Plan adopted by NCUAQMD (May 11, 1995) or produce PM<sub>10</sub> emission levels that would contribute to exceedances of the state PM<sub>10</sub> standard.

Humboldt County is in attainment of all federal and state criteria air pollutant standards, except for State PM<sub>10</sub> levels, for which the entire North Coast Air Basin, including Humboldt County, is currently designated as a non-attainment area.

Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles are those that are larger than 2.5 microns but smaller than 10 microns, or PM<sub>10</sub>. PM<sub>2.5</sub> refers to fine suspended particulate matter with an aerodynamic diameter of 2.5 microns or less that is not readily filtered out by the lungs. Nitrates, sulfates, dust, and combustion particulates are major components of PM<sub>10</sub> and PM<sub>2.5</sub>. These small particles can be directly emitted into the atmosphere as by-products of fuel combustion, through abrasion, such as tire or brake lining wear, or through fugitive dust (wind or mechanical erosion of soil). They can also be

formed in the atmosphere through chemical reactions. Particulates may transport carcinogens and other toxic compounds that adhere to the particle surfaces, and can enter the human body through the lungs.

**Impacts due to Construction Emissions.** Fugitive dust emissions are generally associated with demolition, land clearing, exposure of soils to the air, and cut-and-fill operations. Dust generated during construction varies substantially on a project-by-project basis depending on the level of activity, the specific operations, and weather conditions. The U.S. EPA has developed an approximate emission factor of 1.2 tons per acre per month of activity for construction-related emissions of total suspended particulates. This factor assumes a moderate activity level, moderate silt content in soils being disturbed, and a semi-arid climate. ARB estimates that 64 percent of construction-related total suspended particulate emissions occur in the form of PM<sub>10</sub>. However, construction emissions can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors.

There are a number of feasible control measures that can be reasonably implemented to significantly reduce PM<sub>10</sub> and PM<sub>2.5</sub> emissions from construction activities.

Construction activities also generate combustion emissions from utility engines, heavy-duty construction vehicles, equipment hauling materials to and from construction sites, and motor vehicles transporting construction crews. Exhaust emissions from construction activities vary daily as construction activity levels change. The use of construction equipment results in localized exhaust emissions.

**Impacts due to Operational Emissions.** Implementation of the proposed General Plan Update would help facilitate the 11 percent increase in population projected by the California Department of Finance to occur between the years 2007 and 2030 (an average annual rate of approximately 0.56 percent). During the planning period of the General Plan, new roads, homes, and businesses will be constructed; new County residents will drive on unpaved and paved roads during their regular daily activities; some new residents will participate in the local economy in manufacturing and industrial jobs, and new woodstoves will be installed to heat homes, all of which will add additional fine particulate emissions (PM<sub>10</sub>) into the atmosphere. In addition, natural emissions of PM<sub>10</sub> will continue to occur and contribute to exceedances of the standard.

Development allowed under the proposed General Plan Update is projected to lead to increases in the number of vehicle trips and VMT by Humboldt County residents, which in turn will result in increased PM<sub>10</sub> emissions, for which the North Coast Air Basin is in non-attainment for State standards. Base year 2010 daily VMT for the unincorporated county is estimated at 1,940,309 using the origin-destination method<sup>1</sup> of traffic modeling. Peak VMT coincides with projected peak population in 2028, when daily VMT is expected to be 2,078,296. The daily VMT estimate at the end of the project planning period (2040) is 2,051,668, an increase of approximately six percent over 2010 levels.

Vehicle travel on paved and unpaved roads represents approximately 63 percent of PM<sub>10</sub> emissions in the County. The extent to which this may be attributable to travel to and from remote unpermitted illegal cannabis cultivation sites is not addressed by the NCUAQMD

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<sup>1</sup> The origin-destination method counts all VMT from trips occurring entirely within unincorporated county boundaries and one-half of VMT from trips that either begin or end within unincorporated county boundaries. It does not count VMT from trips that pass through the unincorporated county.

Attainment Plan or the General Plan Update policies, standards, or implementation measures. The potential impact of permitting cannabis cultivation sites in remote areas accessed by unpaved roads will be examined in a separate EIR to be prepared prior to the adoption of future land use ordinances for permitting cannabis activities authorized by the Medical Cannabis Regulation and Safety Act (Bus. & Prof. Code § 19300, *et. seq.*, etc.) or the Adult Use of Marijuana Act (Prop. 64 (2016); Bus. & Prof. Code § 26000, *et. seq.*, etc.).

### ***Analysis of Relevant General Plan Update Policies***

The General Plan Update contains policies, standards and implementation measures to support the implementation of the PM<sub>10</sub> Attainment Plan and other NCUAQMD regulations. The NCUAQMD PM<sub>10</sub> Attainment Plan (1995) includes the following control strategies:

- Transportation Control Measures:
  - public transit service and alternative-fueled transit vehicles
  - rideshare programs
  - park and ride lots
  - vehicle buy-back program
  - smoking vehicle program
  - traffic flow improvements
  - bicycling program
- Land Use Measures (not specified; addressed through air quality element)
- Open Burning Measures
  - Residential burning / property development:
  - Woodstove PM<sub>10</sub> control strategies
  - Residential wood burning control measures:
    - enhanced woodstove operation
    - replacement of conventional woodstoves
    - prohibit woodstoves or require EPA certified woodstoves for new development
    - smoke day woodstove curtailments
    - public education
    - home weatherization

The General Plan Update Air Quality Chapter includes the following policies and standards that are consistent with the PM<sub>10</sub> Attainment Plan:

**AQ-P1. Reduce Length and Frequency of Vehicle Trips.** Reduce the length and frequency of vehicle trips through land use and transportation policies by encouraging mixed-use development, compact development patterns in areas served by public transit, and active modes of travel.

**AQ-P2. Reduce Localized Concentrated Air Pollution.** Reduce or minimize the creation of "hot spots" or localized places of concentrated automobile emissions.

**AQ-P3. Fireplace and Woodstove PM<sub>10</sub> Emissions.** Support incentives to minimize emissions from fireplaces and woodstoves.

**AQ-P4. Construction and Grading Dust Control.** Dust control practices on construction and grading sites shall achieve compliance with NCUAQMD fugitive dust emission standards.

**AQ-P5. Air Quality Impacts from New Development.** During environmental review of discretionary permits, reduce emissions of air pollutants from new commercial and industrial development by requiring feasible mitigation measures to achieve the standards of the NCUAQMD.

**AQ-P7. Interagency Coordination.** Coordinate with the NCUAQMD early in the permit review process to identify expected regulatory outcomes and minimize delays for projects involving:

- A. CEQA environmental review;
- B. Building demolition projects that may involve removal of asbestos containing material subject to National Emission Standards for Hazardous Air Pollutants (NESHAP); and
- C. Grading and mining operations subject to State Airborne Toxic Control Measures (ATCM) for naturally occurring asbestos.

Rely on the air quality standards, permitting processes, and enforcement capacity of the NCUAQMD to define thresholds of significance and set adequate mitigations under CEQA to the maximum extent allowable.

**AQ-S1. Construction and Grading Dust Control.** Ground disturbing construction and grading shall employ fugitive dust control strategies to prevent visible emissions from exceeding NCUAQMD regulations and prevent public nuisance.

Policy AQ-P1, Reduce Length and Frequency of Vehicle Trips, would use encouraging mixed-use development, compact development patterns in areas served by public transit, and alternative modes of travel to reduce the length and frequency of vehicle trips and thereby reduce a substantial source of PM<sub>10</sub> emissions.

Policy AQ-P5, Air Quality Impacts from New Development, would require feasible mitigation measures be implemented as part of project approval to reduce emissions from new commercial and industrial development to achieve the standards of the NCUAQMD of air pollutants during environmental review of discretionary permits.

Policy AQ-P8, Interagency Coordination, would involve the NCUAQMD early in the permit review process to identify expected regulatory outcomes and further facilitate the reduction of project related air emissions. These policies would ensure compliance with the PM<sub>10</sub> Attainment Plan's transportation control measures listed above.

Policy AQ-P3, Fireplace and Woodstove PM<sub>10</sub> Emissions, would support incentives to minimize PM<sub>10</sub> emissions from fireplaces and woodstoves, thereby encouraging the replacement of existing woodstoves and decreasing PM<sub>10</sub> emissions. This policy would ensure compliance with the PM<sub>10</sub> Attainment Plan's Open Burning measures listed above.

Policy AQ-P4 and AQ-S1, Construction and Grading Dust Control, would require that dust control practices on construction and grading sites achieve compliance with fugitive dust emission standards, consistent with the local air quality plan.

In addition, per Policy AQ-P9 and AQ-IM3, the County has committed to prepare a County-wide Climate Action Plan to reduce GHG emissions. Many of the GHG reduction measures in the CAP will likely also reduce PM<sub>10</sub> emissions as a co-benefit of reducing GHG emissions. For example,

reducing natural gas and vehicle fuel use in the CAP would also reduce PM<sub>10</sub> combustion and exhaust emissions; likewise, reducing vehicle travel through programs like ridesharing, public transit expansion, and land use planning will reduce fugitive road dust PM<sub>10</sub> emissions. Because the CAP has not yet been developed, the amount of PM<sub>10</sub> reductions is unknown at this point.

No feasible mitigation measures have been identified that would be reasonably expected to result in reducing PM<sub>10</sub> levels below levels that would not violate applicable standards, or not be cumulatively considerable net increase in PM<sub>10</sub> emissions, to a level less than significant.

### Conclusion

While adoption of the proposed General Plan Update would not conflict with or obstruct the application of the current NCUAQMD PM<sub>10</sub> Attainment Plan, there is no evidence that plan is adequate to reduce PM<sub>10</sub> to a level less than significant. Because the County is in non-attainment status for PM<sub>10</sub>, increases in PM<sub>10</sub> emissions that could increase exceedances are significant. Implementation of the proposed General Plan Update would result in a cumulatively considerable net increase in PM<sub>10</sub> emissions. Although applying the General Plan Update policies and standards would reduce impacts that might otherwise be greater, the **impacts remain significant and unavoidable**.

### Impact 3.12.4.2. Sensitive Receptors

Implementation of the General Plan Update would result in additional development that could adversely impact sensitive receptors by generating air pollution.

This section of impact analysis addresses item "d" of the significance criteria described in Section 3.3.3 Global Climate Change, above. Based on Appendix G of the CEQA Guidelines the proposed County General Plan Update would have a significant impact if it would:

- d) Expose sensitive receptors to substantial pollutant concentrations.

TACs can be released by the ongoing activities of certain commercial and industrial operations such as asphalt batch plants, through the emissions of on-road heavy-duty diesel trucks, off-road heavy diesel trucks such as construction vehicles, and the operation of diesel railroad train engines. The proposed General Plan Update would have a significant affect if it would allow the exposure of sensitive receptors to substantial levels of TAC.

Proposed stationary sources or TACs would be subject to NCUAQMD rules and regulations. As discussed above, NCUAQMD would analyze such sources (e.g., health risk assessment) based on their potential to emit TACs. The NCUAQMD would utilize the Air Quality and Land Use Handbook to evaluate and reduce air pollution impacts from new development.

The use of construction related off-road heavy-duty diesel equipment would be temporary. In addition, the ARB adopted emission standards whereby engine manufacturers are now required to meet exhaust standards for NO<sub>x</sub> and PM starting in 2011 that are more than 90 percent lower than current levels, making emissions from off-road engines similar to those from on-road heavy-duty diesel engines. As a result, future construction-related TACs emissions would be less likely to expose sensitive receptors to substantial emissions of TACs as the vehicle fleet is replaced. It is also important to note that compliance with the construction dust mitigation requirements would also reduce PM exhaust emissions.

The NCUAQMD reviews the potential for TAC emissions from new and modified stationary sources through the permitting process. TAC emissions from existing stationary sources are limited by:

- District adoption and enforcement of rules aimed at specific types of sources known to emit high levels of TACs;
- Implementation of the Air Toxics "Hot Spots" (AB 2588) Program; and
- Implementation of the federal Title III Toxics program.

Many facilities, such as solvent-based dry cleaners, produce toxic emissions and existing controls often reduce impacts from these sources to less-than-significant levels. Detailed analyses should be used to determine the potential risk and feasible control measures if consideration is given to siting such a source near sensitive receptors. ARB has also developed an Air Quality and Land Use Handbook which is intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new development. The ARB Handbook indicates that mobile sources continue to be the largest overall contributors to the State's air pollution problems, representing the greatest air pollution health risk to most Californians. The most serious pollutants on a Statewide basis include diesel exhaust particulate matter (diesel PM), benzene, and 1,3-butadiene, all of which are emitted by motor vehicles.

The ARB handbook recommends that planning agencies strongly consider proximity to these sources when finding new locations for "sensitive" land uses such as those described in Action CO-A106 (residentially designated land uses, hospitals and nursing/convalescent homes, hotels and lodging, schools and day care centers, and neighborhood parks). Key recommendations in the Handbook are listed in Table 3.12-4 below. The Handbook specifically states that these recommendations are advisory and acknowledges land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

During construction as well as mining and agricultural operations, various diesel-powered vehicles and equipment would be in use. In 1998, ARB identified particulate matter from diesel-fueled engines as a toxic air contaminant. ARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines (ARB, 2000).

Health risks from TACs are a function of both concentration and duration of exposure. Unlike the above types of sources, construction diesel emissions are temporary, affecting an area for a period of days or perhaps weeks. Additionally, construction-related sources are mobile and transient in nature, and the bulk of the emission occurs at a substantial distance from nearby receptors. Because of its short duration, health risks from construction emissions of diesel particulate would be a less-than-significant impact.

While stationary TAC sources are regulated under NCUAQMD permitting programs, mobile sources of TAC are largely unregulated<sup>2</sup> and can contribute to elevated health risks when located near receptors, particularly concentrations of dense residential uses such as a residential subdivision. Primary mobile TAC sources include truck traffic on freeways and sources

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<sup>2</sup> Although new vehicle engines must meet ARB and EPA standards, there is limited regulation for emissions from the existing vehicle fleet and no regulations which control vehicle activity.

Table 3.12-4. ARB's Recommendations on Siting New Sensitive Land Uses.

Source	Category Advisory Recommendations
Freeways and High-Traffic Roads	Avoid concentrating sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
Distribution Centers	Avoid avoid concentrating sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week).  Take into account the configuration of existing distribution centers and avoid concentrating residences and other new sensitive land uses near entry and exit points.
Rail Yards	Avoid concentrating sensitive land uses within 1,000 feet of a major service and maintenance rail yard.  Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	Avoid concentrating sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the CARB on the status of pending analyses of health risks.
Refineries	Avoid concentrating sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	Avoid concentrating sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloroethylene	Avoid concentrating sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district.  Do not concentrate sensitive land uses in the same building with perc dry cleaning operations.
Gasoline Dispensing Facilities	Avoid concentrating sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.

## Notes:

1. These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.
2. Recommendations are based primarily on data showing that the air pollution exposures addressed here (i.e., localized) can be reduced as much as 80 percent with the recommended separation.
3. The relative risk for these categories varies greatly. To determine the actual risk near a particular facility, a site-specific analysis would be required. Risk from diesel PM will decrease over time as cleaner technology phases in.
4. These recommendations are designed to fill a gap where information about existing facilities may not be readily available and are not designed to substitute for more specific information if it exists. The recommended distances take into account other factors in addition to available health risk data (see individual category descriptions).
5. Site-specific project design improvements may help reduce air pollution exposures and should also be considered when siting new sensitive land uses.
6. This table does not imply that mixed residential and commercial development in general are incompatible. Rather it focuses on known problems like dry cleaners using perchloroethylene that can be addressed with reasonable preventative actions.
7. A summary of the basis for the distance recommendations can be found in Table 1-2 (ARB, 2005). Source: ARB, 2005.

that attract diesel truck traffic, such as warehousing facilities or truck stops. Timber harvesting generates truck traffic in Humboldt County, but does not pose a serious health risk due to the seasonal nature of harvesting and the open rural character of the area that allows for dispersal of emissions. Similarly, individual or small clusters of rural dwellings do not typically face elevated health risk, even when in proximity to staging areas for timber harvesting, because the concentration of exposure is sporadic and highly diluted. Elevated health risks would only occur with continuous and/or concentrated exposure over many years.

## **Analysis of Relevant General Plan Update Policies**

The General Plan Update contains policies and implementation measures to reduce air quality impacts to sensitive receptors. Policy AQ-P6, Buffering Land Uses, would require that the use of buffers between new sources of emissions and adjacent land uses to minimize exposure to air pollution be evaluated during environmental review of discretionary commercial and industrial projects. This policy is further strengthened by the application of Standard AQ-S3, Buffering Land Uses, which requires that the ARB's Air Quality and Land Use Handbook: A Community Health Perspective and NCUAQMD recommendations be followed when considering buffers between new commercial and industrial sources of emissions and adjacent land uses.

Policy AQ-P5, Air Quality Impacts from New Development, would require feasible mitigation measures be implemented as part of project approval to reduce emissions from new commercial and industrial development to achieve the standards of the NCUAQMD of air pollutants during environmental review of discretionary permits.

Policy AQ-P8, Interagency Coordination, would involve the NCUAQMD early in the permit review process to identify expected regulatory outcomes and further facilitate the reduction of project related air emissions.

Policy AQ-P4, Construction and Grading Dust Control, would require that dust control practices on construction and grading sites achieve compliance with fugitive dust emission standards, consistent with the local air quality plan.

Policy AQ-P2, Reduce Localized Concentrated Air Pollution, would require that the creation of "hot spots" or localized places of concentrated automobile emissions be reduced or minimized.

### ***Conclusion***

New development projects that would place sensitive receptors near a TAC source at a distance that is within the ranges indicated in Table 3.12-4 would be considered to have an elevated risk. As stated previously, policies of the Draft General Plan aim to provide a balance of jobs and housing within growth areas. This strategy could allow for uses that are potential stationary TAC sources (e.g., distribution centers) in proximity to residential uses. Development in Humboldt County near high volume freeways could be a source for an elevated health risk for residents. In these cases, it is advisable to conduct a health risk assessment using a dispersion model to calculate this increased risk. TAC risk is based on several factors including the vehicle fleet mix and other traffic data and site specific meteorological data.

Draft General Plan Policy AQ-P6 promotes improving air quality through land use planning decisions, and implementation measure AQ-IM2 requires coordination with NCUAQMD on development proposals for new sources of toxic air pollutants.

### ***Mitigation***

Implementation of Mitigation Measure 3.12.6.2 would insure that any future development adjacent to potential sources of TAC's would not expose sensitive receptors to an increased health risk. The following implementation measure below shall be fulfilled to help address the potential impacts related to the exposure of sensitive receptors to TAC's

**Mitigation Measure 3.12.4.2:** Add Implementation Measure AQ-IM7 to the Draft General Plan as follows:

**AQ-IM7.** Regulate the location and operation of land uses to avoid or mitigate harmful or nuisance levels of air emissions to the following sensitive receptors: residential uses, hospitals and nursing/convalescent homes, hotels and lodging, schools and day care centers and neighborhood parks. New development shall follow the recommendations for siting new sensitive land uses consistent with the ARB's recommendation as shown in Table 3.12-4.

#### ***Level of Significance After Mitigation***

Mitigation Measure 3.12.4.2 would serve to regulate the location and operation of land uses to avoid or mitigate harmful or nuisance levels of air emissions to sensitive receptors. For example, a new industrial development project with significant air emissions such as a wood-burning power plant would not be allowed in an area where there are sensitive receptors like residential uses downwind of the development. Additional siting criteria can be found in Table 3.12-4. With the additional of Mitigation Measure 3.12.4.2, General Plan Update policies and standards as well as the regulatory authority of the NCUAQMD would limit the exposure of sensitive receptors to new sources of TACs to a **less than significant level**.

#### **Impact 3.12.4.3 Objectionable Odors**

Implementation of the General Plan Update would result in additional development that could adversely impact air quality by generating objectionable odors.

This section of impact analysis addresses item "e" of the significance criteria described in Section 3.12.4 *Air Quality - Thresholds of Significance*, above. Based on Appendix G of the CEQA Guidelines the proposed County General Plan Update would have a significant impact if it would:

- e) create objectionable odors affecting a substantial number of people.

Implementation of the General Plan Update under the Preferred Plan could result in the exposure of sensitive receptors to emissions of objectionable odors. Commercial, industrial, and agricultural uses may incorporate sources of odors near existing or proposed sensitive receptors. The operation of such uses could result in the exposure of sensitive receptors to emissions of objectionable odors.

Potential odor impacts should be evaluated for both (1) sources of odor locating near existing receptors, and (2) receptors locating near existing odor sources. It is unknown at this point what types and locations of specific establishments could be developed under implementation of the Draft General Plan, and it is possible that some uses (e.g., wastewater treatment plants) could have the potential to produce odors. Some objectionable odors may also be generated from the operation of diesel-powered construction equipment and/or asphalt paving during the construction period of individual projects. However, these odors would be short term in nature and would not result in permanent impacts to surrounding land uses, including sensitive receptors within and adjacent to the project site.

The NCUAQMD is responsible for enforcing the provisions of California Health and Safety Code Section 41700 which prohibits the discharge of anything that could endanger the comfort or health of the public. Nuisance odors are regulated by this section, although

certain odors are exempted, such as odors from agricultural activities and composting facilities. The NCUAQMD enforces Section 41700 through its nuisance rule. Any actions related to odors are based on citizen complaints to local governments and the NCUAQMD.

The County receives very few complaints regarding odors emanating from permitted development. There is often not enough evidence to suggest odors are coming from any one source or that any mitigating action should be taken based on these complaints. The NCUAQMD gets considerable complaints from the public in regards to open burning of Non-Approved Combustibles, coffee roasters, fish/shellfish drying, and autobody/paint shops. These are not presently under permit. The NCUAQMD does not get very many complaints regarding agriculture or farming odors. The most effective measure available to reduce odor impacts is to establish a buffer between the odor source and the nearest sensitive receptor. A safety margin also should be considered in establishing a buffer zone to allow for future expansion of operations at the source of the odors.

### **Analysis of Relevant General Plan Update Policies**

General Plan Update policies, programs, and standards described in Impact 4.12.5.1 above would lessen the effects of objectionable odors on sensitive receptors. In particular, Policy AQ-P6, Buffering Land Uses, and Standard AQ-S3, requires that the ARB *Air Quality and Land Use Handbook* be utilized when considering buffers between new commercial and industrial sources of emissions and sensitive receptors. The *Air Quality and Land Use Handbook* contains specific guidance relating to potential sources of odor and dust complaints. Mining also has buffer requirements through the CCAP and mining ordinances and therefore, mining odor impacts would be less than significant. With implementation of the Draft General Plan policies, the potential for creation of objectionable odors associated with build-out of the Draft General Plan would be less than significant.

### ***Conclusion***

Policies, programs, standards and other requirements described in the Air Quality Element reduce the impacts of the project related to objectionable odors to **less than significant**.

### ***Mitigation***

None required.