

This section describes the air quality impacts of the proposed 2008-2028 General Plan. It examines the climatic influences that affect air quality of the General Plan Planning Area and also describes available data on measured contaminant levels. In addition, it outlines the regulatory and planning agencies and programs relevant to the General Plan Planning Area. The reader is referred to Section 6.0 Cumulative Impacts for a discussion of global warming and climate change. The Urbemis 2007 emission report is included in **Appendix 4.3-1**. This section of the EIR addresses comments received by the Tehama County Air Pollution Control District (TCAPCD) in response to the Notice of Preparation.

4.3.1 EXISTING SETTING

AIR POLLUTION CLIMATOLOGY

Tehama County is located in the Sacramento Valley Air Basin, approximately midway between Sacramento and the Oregon border. The air basin is about 200 miles long in a north-south direction, and has a maximum width of about 150 miles, although the width of the valley floor only averages about 50 miles. The Air Basin is further divided into two planning areas: the Northern Sacramento Valley Air Basin (NSVAB) and the Greater Sacramento Air Region. Tehama County is located in the NSVAB.

The NSVAB is bounded on the west by the Coastal Range and on the east by the southern portion of the Cascade Range and the northern portion of the Sierra Nevada. These mountain ranges reach heights in excess of 6,000 feet with peaks rising much higher. This provides a substantial physical barrier to locally created pollution.

Tehama County's climate is considered Mediterranean, which is characterized by hot, dry summers and cool, wet winters. Between mid-April and mid-October, significant precipitation is unlikely and high temperatures often peak at over 100 degrees Fahrenheit (°F) with lows in the high 50s and low 60s. During the winter, highs are typically in the 60s with lows in the 30s.

Wind direction is primarily up- and down-valley (roughly north-south) due to the channeling effect of the mountains to either side of the valley. During the summer months, surface air movement is from the south, particularly during the afternoon hours. During the winter months, wind direction is more variable.

Inversions occur in the NSVAB with great frequency in all seasons. The most stable inversions occur in late summer and fall. The summertime inversions are often the result of marine air pushing under an overlying warm air mass. These are termed "marine inversions" and are generally accompanied by brisk afternoon winds, which provide good air circulation. In contrast, many autumn inversions are the result of warm air subsiding in a high-pressure cell where accompanying light winds do not provide adequate dispersion. Photochemical smog in the early summer and fall is enhanced by the almost unbroken succession of warm sunny days during these seasons.

Carbon monoxide, oxides of nitrogen, particulate matters, and lead particulate concentrations in the late fall and winter are highest when there is little interchange of air between the valley and the coast and when humidity is high following winter rains. This type of weather is associated with radiation fog, known as "tule fog," when temperature inversions at ground level persist over the entire valley for several weeks and air movement is virtually absent.

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TEHAMA COUNTY AIR POLLUTION CONTROL DISTRICT

The Tehama County Air Pollution Control District (TCAPCD) is one of seven air pollution control districts that make up the NSVAB. The NSVAB consists of Shasta, Tehama, Glen, Butte, Colusa, Yuba and Sutter air pollution control districts. These seven air quality districts work together to employ a regional approach to air pollution control. The District's boundaries are the same as Tehama County's.

Within Tehama County, the TCAPCD is the local air quality agency responsible for adopting and enforcing controls on stationary sources of air pollutants through its permit and inspection programs. Other District responsibilities include monitoring air quality, regulating agricultural burning, preparation of clean air plans, and responding to air quality complaints from citizens.

Transport of Pollutants

Transport of air pollutants is defined as air pollutants moving from one air district to another. The California Air Resources Board (ARB) requires upwind districts to take action towards reducing their smog impacts on downwind districts, in conjunction with efforts to reduce smog levels within their own district. This means that an air district that is close to meeting ozone standards at home cannot reduce smog-fighting efforts if its air pollution continues to impact a neighboring district. Districts are required to adopt all feasible measures to reduce the amount of ozone-forming pollutants that are transported from one district to another.

The California Air Resources Board monitors the transport of air pollutants, the results of which have been documented in the 2001 ARB report entitled *Assessment of the Impacts of Transported Pollutants on Ozone Concentrations in California*. In this report it is noted that air pollution is transported from the Broader Sacramento Area (BSA) to the Upper Sacramento Valley (USV), thus establishing the BSA/USV Transport Couple¹. The BSA includes: Sacramento Metropolitan Air Quality Management District, Yolo-Solano Air Pollution Control District and portions of the El Dorado County Air Pollution Control District, the Placer County Air Pollution Control District, and the Feather River Air Quality Management District. The USV is comprised of those counties located within the NSVAB. The impacts of transported BSA air pollution to districts within the USV are variable, with impacts being classified as "inconsequential", "significant", and "overwhelming". The most recent ARB assessment, published in March 2001, indicates that all three of these classifications occur in the BSA/USV transport couple region.

Based on the 1993 and 1996 assessments, transport from the BSA was found to be "overwhelming" at the following air monitoring sites:

Chico (Butte County)	Arbuckle (Colusa County)
Willows (Glenn County)	Redding (Shasta County)
Yuba City (Sutter County)	Red Bluff (Tehama County)

Based on the 1990 and 1996 assessments, transport was found to be "significant" at the following air monitoring sites:

Chico (Butte County)	Colusa and Arbuckle (Colusa County)
Willows (Glenn County)	Redding and Anderson (Shasta County)
Yuba City (Sutter County)	Red Bluff (Tehama County).

¹ **Couple** – a pair of geographic areas, one considered upwind and one considered downwind.

Based on the 1990 assessment, transport was found to be “inconsequential” at:

Redding and Anderson (Shasta County)

AMBIENT AIR QUALITY STANDARDS

Both the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (ARB) have established ambient air quality standards for common pollutants. These ambient air quality standards represent the maximum level of pollutants that are considered safe and necessary to avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called “criteria” pollutants because the health and other effects of each pollutant are described in criteria documents. The EPA criteria pollutants include ozone(O₃), carbon monoxide (CO), nitrogen dioxide (NO₂ - a form of NO_x), sulfur dioxide (SO₂ - a form of SO_x), particulate matter both 10 microns and 2.5 microns in size and smaller (PM₁₀ and PM_{2.5}), and lead (Pb). The ARB has established state standards for the EPA’s criteria pollutants, as well as for other pollutants.

Table 4.3-1 summarizes the federal and California ambient air quality standards for important 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. In general, the California standards are more stringent. This is particularly true for ozone and particulate matter.

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

Pollutant	Averaging Time	Federal Primary Standard ¹	State Standard
Ozone	1-Hour	--	0.09 ppm
	8-Hour	0.075 ppm	0.07 ppm
Carbon Monoxide	8-Hour	9.0 ppm	9.0 ppm
	1-Hour	35.0 ppm	20.0 ppm
Nitrogen Dioxide	Annual Average	0.053 ppm	--
	1-Hour	--	0.18 ppm
Sulfur Dioxide	Annual Average	0.03 ppm	--
	24-Hour	0.14 ppm	0.04 ppm
	1-Hour	--	0.25 ppm
PM ₁₀	Annual Average	--	20 µg/m ³
	24-Hour	150 µg/m ³	50 µg/m ³
PM _{2.5}	Annual	15 µg/m ³	12 µg/m ³
	24-Hour	35 µg/m ³	--

Notes: ppm = parts per million; µg/m³ = micrograms per cubic meter

¹ Federal primary standards are those levels of air quality necessary, with an adequate margin of safety, to protect public health.

Source: US Environmental Protection Agency, 2008, and California Air Resources Board, 2008a

In accordance with federal and state ambient air quality standards, counties in California receive a designation that indicates if air quality within the county is meeting these standards. Counties achieving state and/or federal standards receive an “attainment” designation, while

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those that do not meet the standards receive a “nonattainment” designation. In some cases, counties receive an “unclassified” status, indicating data did not support a designation of attainment or nonattainment. Tehama County is currently in attainment or unclassified status for all national criteria pollutant standards. Tehama County is a nonattainment area for state standards for ozone and PM₁₀.

AIR POLLUTANTS OF CONCERN AND HEALTH EFFECTS

The most problematic pollutants in Tehama County are ozone and particulate matter. The health effects and major sources of these pollutants are described below. Toxic air contaminants are a separate class of pollutants and are discussed later in this section.

Ozone

Ozone is the most prevalent of a class of photochemical oxidants formed in the urban atmosphere. Ground-level ozone, commonly referred to as smog, is greatest on warm, windless, sunny days. Unlike other pollutants, ozone is not emitted directly into the air. Rather, it forms through a complex series of chemical reactions between reactive organic gases (ROG) and nitrogen oxides (NO_x), known as “ozone precursors.” These reactions occur over time in the presence of heat and sunlight. The principal sources of the ozone precursors are the combustion of fuels, primarily from motor vehicles, and the evaporation of solvents, paints and fuels.

Ground-level ozone formation can occur in a matter of hours under ideal conditions. The time required for ozone formation allows the reacting compounds to spread over a large area, producing a regional pollution concern. Once formed, ozone can remain in the atmosphere for one or two days.

Ozone is a public health concern because it is a respiratory irritant that increases susceptibility to respiratory infections and diseases, and at high concentrations can harm lung tissue. In addition, ozone can cause substantial damage to leaf tissues of crops and natural vegetation and can damage many natural and manmade materials by acting as an oxidizing agent.

Particulate Matter

Both federal and state standards differentiate between two types of particulate matter. Coarse particulate matter (PM₁₀) is between 2.5 and 10 microns in diameter and arises primarily from natural processes, such as wind-blown dust or soil. Fine particulate matter (PM_{2.5}) is less than 2.5 microns in diameter and is produced mostly as a result of combustion activities. Fuel burned in cars and trucks, power plants, factories, fireplaces and wood stoves produces fine particles.

The level of fine particulate matter in the air is a public health concern because it can bypass the body’s natural filtration system more easily than larger particles, and can lodge deeply 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.

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. Unlike criteria pollutants, no safe levels of exposure to TACs have been established. There are many different types of TACs, with varying degrees of toxicity.

Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Public exposure to TACs can result from emissions from normal operations, as well as accidental releases of hazardous materials during upset conditions. The health effects of TACs include cancer, birth defects, neurological damage and death.

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Tehama County has three air quality monitoring sites, two located in the City of Red Bluff, on Messer Drive and on Oak Street, and a seasonal one located on Tuscan Butte. The Red Bluff-Messer Drive site only monitors PM₁₀, and the Red Bluff-Oak Street site only measures ozone. The Tuscan Butte site also only measures ozone. **Table 4.3-2** shows historical occurrences of pollutant levels exceeding the state and/or federal ambient air quality standards for the past three years of available data. Again, Tehama County is currently in attainment or unclassified status for all national criteria pollutant standards. However, the monitoring sites recorded exceedances of state and federal ambient standards for ozone and state standards for PM₁₀ during the 2005-2007 time period.

**TABLE 4.3-2
DAYS EXCEEDING AMBIENT AIR QUALITY STANDARDS, 2005-2007**

Standard	Days Exceeding Ambient Air Quality Standard								
	2005			2006			2007		
	Messer Drive	Oak Street	Tuscan Butte	Messer Drive	Oak Street	Tuscan Butte	Messer Drive	Oak Street	Tuscan Butte
Ozone (State – hourly)	-	0	2	-	0	4	-	0	0
Ozone (Fed. – hourly)	-	0	0	-	0	0	-	0	0
Ozone (Fed. – 8 hour)	-	0	2	-	0	10	-	0	1
PM ₁₀ (State)*	0	-	-	4	-	-	1	-	-
PM ₁₀ (Federal)*	0	-	-	0	-	-	0	-	-
PM _{2.5} (Federal)	-	-	-	-	-	-	-	-	-

Source: California Air Resources Board, 2008b

Notes: * Measured days.

SENSITIVE RECEPTORS

Sensitive receptors are facilities where population groups sensitive to air pollutant changes (e.g., children, the elderly, the acutely and the chronically ill) are likely to be located. These land uses include schools, retirement homes, convalescent homes, hospitals and medical clinics. The major sensitive receptors in Tehama County are schools, residences and medical centers.

ODORS

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

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With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity. Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

EMERGING AIR QUALITY ISSUES

The following is a discussion of emerging air quality issues that would not normally have been addressed by general plan policies and programs.

Stationary Air Pollutant Sources in the Planning Area

The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, 1987, Connelly) was enacted in September 1987. Under this act, stationary sources are required to report the types and quantities of certain substances their facilities routinely release into the air. The goals of the Air Toxics "Hot Spots" Act are to collect emission data, to identify facilities having localized impacts, to ascertain health risks, and to notify nearby residents of significant risks. The Hotspots Analysis and Reporting Program (HARP) is a tool that assists with the programmatic requirements of the Air Toxics "Hot Spots" Program. HARP is a computer software package that combines the tools of emission inventory database, facility prioritization calculation, air dispersion modeling, and risk assessment analysis. All of these tools are tied to a single database allowing information to be shared and utilized.

The inventory of stationary sources of criteria pollutants and toxic emissions, maintained by the ARB, shows 95 stationary air pollutant sources in Tehama County². These sources include food processing plants, auto body repair, asphalt facilities, crematoriums, petroleum storage facilities and other facilities. None of these sources emits toxic pollutants at a level that threatens the health of residents.

TAC/Land Use Issues

The California Air Resources Board recently published an air quality/land use handbook (ARB, 2005). The handbook, which is advisory and not regulatory, was developed in response to recent studies that have demonstrated a link between exposure to poor air quality and respiratory illnesses, both cancer and non-cancer related. The ARB handbook recommends that planning

² ARB Facility Search Engine available at <http://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php>

agencies strongly consider proximity to these sources when finding new locations for "sensitive" land uses such as homes, medical facilities, daycare centers, schools and playgrounds. Air pollution sources of concern include freeways, rail yards, ports, refineries, distribution centers, chrome plating facilities, dry cleaners and large gasoline service stations.

Key recommendations in the handbook include taking steps to avoid siting new, sensitive land uses in the following areas:

- Within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day;
- Within 1,000 feet of a major service and maintenance rail yard;
- Immediately downwind of ports (in the most heavily impacted zones) and petroleum refineries;
- Within 300 feet of any dry cleaning operation (for operations with two or more machines, provide 500 feet);
- Within 300 feet of a large gasoline dispensing facility.

Diesel Exhaust/Land Use Issues

In 1998, after a 10-year scientific assessment process, the Air Resources Board identified particulate matter from diesel-fueled engines as a toxic air contaminant (TAC). The exhaust from diesel engines contains hundreds of different gaseous and particulate components, many of which are toxic. Many of these compounds adhere to the particles, and because diesel particles are so small, they penetrate deep into the lungs. Diesel engine particulate has been identified as a human carcinogen. Mobile sources, such as trucks, buses, automobiles, trains, ships and farm equipment are by far the largest source of diesel emissions. Studies show that diesel particulate matter concentrations are much higher near heavily traveled highways and intersections.

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, the Air Resources Board 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 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.

Tehama County public schools include 21 elementary schools, four middle schools and five high schools. Additionally, there are three private elementary schools and one private Catholic high school in the County. There are also two charter schools in operation. Many of the schools in the

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County have high volumes of bus traffic during daily morning and afternoon operations, which contribute to diesel emissions in the Planning Area. High volume highways in the Planning Area include Interstate 5 and State Highway 99, which have a high volume of daily truck traffic. Trucks are considered major 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. Interest in wood smoke is likely to increase with the recent adoption of a PM_{2.5} national standard.

AIR POLLUTANTS OF CONCERN IN TEHAMA COUNTY

The state and national ambient air quality standards cover a wide variety of pollutants. Only a few of these pollutants are problems in Tehama County, either due to the strength of the emission or the climate of the region. The TCAPCD currently operates two air quality monitoring stations in Red Bluff for measuring ozone and inhalable particulate matter (PM₁₀).

A significant impact to air quality in Tehama County involves the location of agricultural operations in close proximity to sensitive areas, such as wildlife habitat and residential land uses. Agricultural activities frequently involve the application of pesticides or fertilizers or the concentration of large numbers of animals. Odors and chemical particulates may then be carried by the wind into nearby areas. Similarly, dust and dirt from plowing or harvesting operations may also impact adjacent land uses. These impacts are particularly applicable to the I-5 corridor Planning Areas of the County where significant growth is occurring adjacent to valuable agricultural uses.

Ozone - Motor vehicles are the single largest source of ozone precursors emissions in Tehama County. Ground level ozone, which is often referred to as smog, is not emitted directly, but is formed in the atmosphere through complex chemical reactions between nitrogen oxides (NO_x) and reactive organic gases (ROG) in the presence of sunlight. Obviously, the main sources of ozone within the Tehama County span the major transportation corridors of Interstate-5 and Highway 99.

Particulate Matter (PM₁₀) - Particulate matter includes a wide range of solid or liquid particles, including smoke, dust, aerosols and metallic oxides. There are many sources of particulate matter emissions, including combustion, industrial processes, grading and construction, and motor vehicles.

Unpaved road dust is the single largest source of PM₁₀ in Tehama County. Wood burning in fireplaces and stoves is a significant source of particulate matter, particularly during episodes when levels are highest.

Dust and smoke from timber operations also pose threats to air quality. Dust may result from various harvesting activities. Smoke from burning of vegetation emits a variety of gasses and particles into the air, which affects visibility and causes odors. These impacts, however, are highly localized and restricted to the Eastern and Western Planning Areas.

4.3.2 REGULATORY FRAMEWORK

FEDERAL

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) is responsible for enforcing the Federal Clean Air Act and the 1990 amendments to it ("Federal CAA"), and the national ambient air quality standards (federal standards) that the EPA establishes. These standards identify levels of air quality for six "criteria" pollutants, which are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect public health and welfare. The six criteria pollutants include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead. The U.S. EPA also has regulatory and enforcement jurisdiction over emission sources beyond state waters (outer continental shelf), and sources that are under the exclusive authority of the federal government, such as aircraft, locomotives, and interstate trucking.

Federal Hazardous Air Pollutant Program

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

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

STATE

California Air Resources Board

The California Air Resources Board, a department of the California Environmental Protection Agency (Cal EPA), oversees air quality planning and control throughout California. It is primarily responsible for ensuring implementation of the 1989 amendments to the California Clean Air Act (CCAA), responding to the Federal CAA requirements, and for regulating emissions from motor vehicles and consumer products within the State. ARB has established emission standards for vehicles sold in California and for various types of equipment available commercially. It also sets fuel specifications to further reduce vehicular emissions.

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The amendments to the CCAA establish ambient air quality standards for the State (state standards) and a legal mandate to achieve these standards by the earliest practical date (TCAPCD, 1998). These standards apply to the same six criteria pollutants as the Federal CAA, and also include sulfate, visibility, hydrogen sulfide, and vinyl chloride. They are more stringent than the federal standards and, in the case of PM₁₀ and SO₂, far more stringent.

Tanner Air Toxics Act

California regulates TACs primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB can designate a substance as a TAC. To date, ARB has identified more than 21 TACs and has adopted EPA's list of HAPs as TACs. Most recently, diesel particulate matter was added to the ARB list of TACs.

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

AB 2588 requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures. ARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators). In February 2000, ARB adopted a new public-transit bus-fleet rule and emission standards for new urban buses. These rules and standards provide for (1) more stringent emission standards for some new urban bus engines, beginning with 2002 model year engines; (2) zero-emission bus demonstration and purchase requirements applicable to transit agencies; and (3) reporting requirements under which transit agencies must demonstrate compliance with the urban transit bus fleet rule. Upcoming and recent milestones include the low-sulfur diesel-fuel requirement, and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide.

Air Quality and Land Use Handbook

As part of the Air Resources Board's Community Health Program, ARB has 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 projects that go through the land use decision-making process. ARB is also developing related information and technical evaluation tools for addressing cumulative air pollution impacts in a community. Any recommendations or considerations contained in the Handbook are voluntary and do not constitute a requirement or mandate for either land use agencies or local air districts.

The primary goal in developing this document was to provide information that will help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution. Recent air pollution studies have shown an association between respiratory and other non-cancer health effects and proximity to high traffic roadways. Other studies have shown that diesel exhaust and other cancer-causing chemicals emitted from cars and trucks are responsible for much of the overall cancer risk from airborne toxics in California. Also, ARB community health risk assessments and regulatory programs have produced important air quality information about certain types of facilities that should be considered when siting new

residences, schools, day care centers, playgrounds, and medical facilities (i.e., sensitive land uses). Sensitive land uses deserve special attention because children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the non-cancer effects of air pollution. There is also substantial evidence that children are more sensitive to cancer-causing chemicals.

The Handbook identifies ARB's recommendations regarding the siting of new sensitive land uses near freeways, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and gasoline dispensing facilities. This list consists of the air pollution sources that have been evaluated from the standpoint of the proximity issue. It is based on available information and reflects ARB's primary areas of jurisdiction – mobile sources and toxic air contaminants.

LOCAL

Tehama County Air Pollution Control District

As previously discussed, Tehama County is located within the Tehama County Air Pollution Control District. The District participates with other air districts in the NSVAB in formulating open burning plans and attainment plans for achieving and maintaining state ambient air quality standards. Control measures and mitigation of indirect source emissions are developed with as much uniformity as possible, considering unique differences among the various rural and urban areas.

Northern Sacramento Valley Air Basin 2006 Air Quality Attainment Plan

The Air Districts in the NSVAB have adopted the 2006 Air Quality Attainment Plan. This Plan was developed for the purpose of achieving and maintaining healthful air quality throughout the air basin. This triennial update of the NSVAB Air Quality Attainment Plan addresses the progress made in implementing the 2003 plan and proposes modifications to the strategies necessary to attain the California ambient air quality standard for the 1-hour ozone standard at the earliest practicable date. The 2006 Plan identified those portions of the NSVAB designated as "non-attainment" for the State ambient air quality standards. The plan also identified the air pollution problems to be cooperatively addressed on as many fronts as possible in order to make the region a healthier place to live now and in the future. Like the 1994, 1997 and 2000 Plans, the 2006 Plan focused on the adoption and implementation of control measures for stationary sources, area wide sources, indirect sources, and addressed public education and information programs. The 2006 Plan also addressed the effect that pollutant transport has on the NSVAB's ability to meet and attain the State standards.

TCAPCD Rules and Regulations

TCAPCD has adopted a number of rules and regulations for the purpose of attaining the goals set forth in the Federal and State Clean Air Acts. These rules and regulations, known as The Rules and Regulations of the Tehama County Air Pollution Control District, have been implemented to provide an orderly procedure for the review of new sources of air pollution and of the modification and operation of existing sources through the issuance of permits. While there are a number of exceptions, the Rules and Regulations pertain to "any person building, erecting, altering or replacing any article, machine, equipment or other contrivance, the use of which may cause, eliminate, reduce, or control the issuance of air contaminants". The Rules and Regulations contain specific guidelines for admittance of air pollutants (i.e. dust, odors, asbestos, etc.) by any new and modified stationary air pollution sources.

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Toxic Air Contaminants

At the local level, air pollution control or management districts may adopt and enforce ARB's control measures. Under TCAPCD's Regulation 2:1 ("General Permit Requirements"), Rule 2:3A ("New Source Review"), and Rule 7:1 (Federal Operating Permit"), all sources that possess the potential to emit TACs are required to obtain permits from the district. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new-source review standards and air-toxics control measures.

TCAPCD limits emissions and public exposure to TACs through a number of programs. TCAPCD prioritizes TAC emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors.

Sources that require a permit are analyzed by TCAPCD (e.g., health risk assessment) based on their potential to emit toxics. If it is determined that the project will emit toxics in excess of TCAPCD's threshold of significance for TACs, as identified below, sources have to implement the BACT for TACs (T-BACT) to reduce emissions. If a source cannot reduce the risk below the threshold of significance even after T-BACT has been implemented, the TCAPCD will deny the permit required by the source. This helps to prevent new problems and reduces emissions from existing older sources by requiring them to apply new technology when retrofitting with respect to TACs.

Odors

In 1991 TCAPCD adopted a nuisance rule that addresses odor exposure. Rule 4:4 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. The provisions of Rule 4:4 do not apply to odors emanating from agricultural operations necessary for the growing of crops or raising of fowl or animals. TCAPCD recommends that odor impacts be addressed in a qualitative manner. Such an analysis shall determine whether the project results in excessive nuisance odors, as defined under the California Code of Regulations and Section 41700 of the California Health and Safety Code, and thus constitutes a public nuisance related to air quality.

County Of Tehama, General Plan

The current Tehama County General Plan (1983) guides future development in unincorporated portions of the County. The General Plan Air Quality Element includes air quality-related policies and implementation designed to protect the County's air quality.

The 1983 General Plan contains the following policies which relate to potential impacts on air quality:

Air Quality: A-a, A-b

Although the 2008-2028 General Plan no longer includes an Air Quality Element, Policy A-a has been incorporated into the proposed Open Space and Conservation Element as policies OS-2.3 and OS-2.4, the full text of which are included in Table 3.0-6 in Section 3.0, Project Description. Further, Policy A-b, which states that "a non-attainment plan shall be developed and implemented if the County no longer meets state and national air quality standards" has been

eliminated because attainment plans, including the conditions under which they are required, are regulated by the California and Federal Clean Air Acts.

4.3.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The County has determined that the project may have significant air quality impacts if it does 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 non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
- 4) Result in sources of toxic air contaminants that may affect surrounding land uses.
- 5) Expose sensitive receptors to substantial pollutant concentrations and create objectionable odors affecting a substantial number of people.

METHODOLOGY

Generally, the air quality analysis for an EIR is based on land use designations identified in the General Plan Land Use 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 4.3-3**). 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 2008-2028 General Plan.

IMPACTS AND MITIGATION MEASURES

Conflict with the TCAPCD Air Quality Attainment Plan

Impact 4.3.1 Implementation of the proposed 2008-2028 General Plan may conflict with or obstruct implementation of the 2006 NSVAB Air Quality Attainment Plan. This impact is considered **potentially 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 changing of 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 implementation of the 2008-2028 General Plan results in an increase of stationary or mobile pollutant emissions above those analyzed in the local air quality attainment plan, the 2008-2028 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 an

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increase in the potential buildout population of a jurisdiction. The Tehama County 2008-2028 General Plan increases the potential buildout population by approximately 119,697 over the existing General Plan by increasing allowable residential densities along the I-5 corridor.

Currently the TCAPCD is in non-attainment for the state ozone and PM₁₀ standards. The California Air Pollution Control and Air Quality Management Districts and the California Air Resources Board (ARB) develop the emission inventory and associated emissions projections jointly that are used in the Air Quality Attainment Plan. The California Emission Forecasting System (CEFS) is the computer tool used to develop the projections. The emission estimates are based on the most currently available growth and control data. For mobile sources, CEFS integrates the emission estimates from the EMFAC model. The emission projections are based on the 1999 inventory with updates as of November 2002. Changes in the General Plan land uses would affect growth projections used for development of the Attainment Plan and result in conflicts between the General Plan and the Attainment Plan.

Proposed General Plan Policies and Implementation Measures that Mitigate Potential Impacts

The following proposed 2008-2028 General Plan policies and action items provide some mitigation of buildout air quality impacts:

Open Space: OS-2.5, OS-2.5a, OS-2.5b

General Plan Policy OS-2.5 requires the County to support the Tehama County Air Pollution Control District in their efforts to enforce local, state, and federal air quality laws, rules, and regulations in order to meet Ambient Air Quality Standards (AAQS). Implementation Measure OS-2.5a requires that the County coordinate with TCAPCD 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. Implementation Measure OS-2.5b requires County facilities and operations comply with mandated air quality measures.

Mitigation Measures

MM 4.3.1 The following mitigation measure shall be added as a new policy under General Plan Goal OS-2:

Tehama County shall work with the Tehama County Air Pollution Control District to assure that emissions from increased population and vehicle miles traveled in the county are included in subsequent Northern Sacramento Valley Air Basin Air Quality Attainment Plans, and will assist the District in identification of additional control measures, as needed to offset emission increases.

The above 2008-2028 General Plan policies, implementation measures and implementation of **MM 4.3.1** would assist in the improvement of air quality conditions. However, the 2008-2028 General Plan allows growth not anticipated in the 2006 Attainment Plan. As such, implementation of the 2008-2028 General Plan would continue to conflict with the Attainment Plan until such time that the Attainment Plan can be revised to assume growth projections identified in the 2008-2028 General Plan. Thus, this impact is considered **significant and unavoidable**.

Violation of Air Quality Standards

Impact 4.3.2 Implementation of the proposed 2008-2028 General Plan may contribute to an existing air quality violation or a projected air quality violation. This impact is considered **potentially significant**.

During the life of the 2008-2028 General Plan, construction-related emissions may contribute to existing and projected air quality violations. However, construction and demolition emissions are generally short-term or temporary in duration. Nevertheless, 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), diesel PM, and emission of ozone forming gases (ROG and NO_x), for which the TCAPCD is in non-attainment. 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. It is anticipated that implementation of the 2008-2028 General Plan would allow for the potential construction of approximately 28,242 dwelling units and 657 acres of commercial, industrial, and office uses during the 2008-2028 planning period. This development along with the supporting infrastructure would generate significant emissions of ROG, NO_x, and PM₁₀. Construction activities associated with buildout under the proposed 2008-2028 General Plan 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.

Emissions from individual development construction sites would be short-term and temporary, but would occur more or less continually through buildout of the General Plan Planning Area. At any given time, several construction projects may be under way, which may result in substantial construction related emissions.

Proposed General Plan Policies and Implementation Measures that Mitigate Potential Impacts

The following proposed 2008-2028 General Plan policies and action items provide some mitigation of buildout air quality impacts:

Open Space: OS-2.1, OS-2.1a, OS-2.1b, OS-2.1c, OS-2.1d, OS-2.5a

General Plan Policy OS-2.1 would require that all new development projects in the County incorporate appropriate measures to reduce impacts to air quality. Implementation Measure OS-2.1a requires all project proponents to coordinate with Tehama County Air Pollution Control District (TCAPCD) on appropriate methodologies for evaluating project emissions and air quality impacts (e.g., emissions modeling software, TCAPCD's thresholds of significance, etc.). Implementation Measure OS-2.1b would require that all new development projects that exceed TCAPCD's thresholds of significance incorporate design, construction, and/or operational features that will result in a reduction in emissions when compared to an "unmitigated baseline" project. Implementation Measure OS-2.1c would require that the County monitor all new development required air quality mitigation and take steps to correct the situation if mitigations are not being managed properly. Implementation Measure OS-2.1d would require dust-free, all-weather sealed surface roads in all new subdivisions and new commercial developments. Implementation Measure OS-2.5a would require that the County coordinate with TCAPCD 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.

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Mitigation Measures

MM 4.3.2 The following mitigation measure shall be added as a new policy under General Plan Goal OS-2:

The County, when implementing or approving projects that would result in considerable grading and/or excavation activities, shall require as a condition of project approval those mitigation measures recommended by the Tehama County Air Pollution Control District to reduce construction-related emissions.

The above 2008-2028 General Plan policies, implementation measures, and implementation of **MM 4.3.2** would reduce potential construction-related air quality impacts. However, development resulting from the proposed General Plan would still substantially contribute to air quality impacts as a result of increased construction. Thus, this impact is considered **significant and unavoidable**.

Increase in Criteria Air Pollutants

Impact 4.3.3 Implementation of the proposed 2008-2028 General Plan may result in a cumulatively considerable net increase in criteria air pollutant emissions for which the region is currently in non-attainment. This impact is considered **potentially significant**.

Implementation of the proposed 2008-2028 General Plan may result in increased employment growth, and an increase in population. These increases would introduce additional mobile and stationary sources of emissions, which would adversely affect regional air quality. The California Environmental Protection Agency has designated the TCAPCD as an ozone and PM₁₀ non-attainment area. The principal sources of the ozone precursors (ROG and NO_x) are the combustion of fuels and the evaporation of solvents, paints, and fuels.

Although the proposed increase in residential densities adjacent to the I-5 corridor in the northern portion of the County is intended to centralize development and decrease the number of vehicle miles traveled, thereby improving air quality as a result, levels of CO, NO_x, and ROG would likely still increase in the County as vehicle use increases with an expanding population. Similarly, as the population increases, regional emissions of ROG, NO_x, PM₁₀, and CO may also increase due to an increased use of natural gas, wood stoves, maintenance equipment, and various consumer products.

Increases in operational air impacts with implementation of the proposed 2008-2028 General Plan 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 and chemical and manufacturing 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.

Increases in industrial and commercial uses, as well as services that provide for an expanding population, intensify stationary source air emissions. Implementation of the proposed General Plan may result in an increase in population and commercial and industrial uses, thereby increasing operational air pollution impacts beyond current day levels. While a portion of the operational impacts would be related to stationary-sources, as discussed below, the highest increases of NO_x and PM₁₀ are anticipated to come from mobile (vehicles) sources (see **Table 4.3-3**).

TABLE 4.3-3
ESTIMATED UNMITIGATED GENERAL PLAN AIR QUALITY EMISSIONS

Input Assumptions								
Planning or Focus Area (Model Run) ¹	Residential		Commercial		Industrial			
	# Units	Trip Gen Rate ²	Acres	Trip Gen Rate ³	Acres	Trip Gen Rate ⁴		
2008-2028 General Plan Lifespan ⁵								
Single Family Residential	27,668	11.52	439.0	41.29	520.0	4.96		
Apartment Low Rise	574	6.90						
Total Projected Annual Emissions								
Emission Source	Tons Per Year				Pounds Per Day			
	ROG	NO _x	PM ₁₀	PM _{2.5}	ROG	NO _x	PM ₁₀	PM _{2.5}
2008-2028 General Plan Lifespan								
Area Source Emissions (Tons/Yr)	693.38	103.90	327.25	314.98	3,799.34	569.32	1,793.15	1,725.92
Operational (vehicle) Emissions (Tons/Yr)	810.89	1,009.86	774.59	151.53	4,443.23	5,533.48	4,244.33	830.30
Total Emissions (Tons/Yr)	1,504.3	1,113.8	1,101.8	466.5	8,242.6	6,102.8	6,037.5	2,556.2

Notes: 1) TCAPCD does not provide EMFAC statistics for use with the Urbemis 2007 air emissions program.. Therefore emissions were calculated based on default assumptions provided in the model for California. Model default assumptions for pass-by and double-counting adjustments were included. Actual emissions will vary depending on how development occurs, the specific types of land uses developed, and emission control measures implemented.

2) Single family residential includes Suburban, Rural Small Lot and Rural Large Lot land use designations. Apartment Low rise includes the Urban land use designation.

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.

5) Acreages for Commercial and Industrial were determined using the ratio of Lifespan to Buildout Housing Units (28,215/184,499 = 0.1529) projected over Buildout commercial and industrial acreages.

Table 4.3-3 illustrates the estimated unmitigated air quality emissions under the 2008-2028 General Plan planning horizon. Increases in regional criteria air pollutants were calculated using the Urbemis 2007 (v9.2.4) computer program. The Urbemis 2007 emission report is included in **Appendix 4.3-1**. 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. Based on the worst-case scenario population and housing growth projections, planning horizon emissions are estimated to be 1,504.3 tons of ROG, 1,113.8 tons of NO_x, 1,101.8 tons of PM₁₀ and 466.5 tons of PM_{2.5} per year. 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 level of development may occur at this time. As discussed under **Impact 4.3.1**, the potential increase in air pollutant emission sources may conflict with the Air Quality Attainment Plan, as well as exceed State and Federal air quality thresholds.

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Motor vehicles are a major source of carbon monoxide in the TCAPCD area. Implementation of the 2008-2028 General Plan is projected to increase the unincorporated County population to 63,647 by 2028, which will increase area traffic. Congested intersections, due to increased traffic, lower average speeds and increase 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 off-set any improvements in CO concentrations. Currently CO emissions are not monitored in Tehama County and the County is considered to have an unclassified designation for CO by the State³. However, considering that the whole State of California is in attainment with CO standards which includes areas with a much greater population than even the projected buildout population of the 2008-2028 General Plan, it can be assumed that the proposed project would not exceed the Federal or State CO standards. Therefore the proposed 2008-2028 General Plan would have a less than significant impact on CO emissions.

Proposed General Plan Policies and Implementation Measures that Mitigate Potential Impacts

The following proposed General Plan policies and action items provide some mitigation of air quality impacts:

Circulation: CIR-1.1, CIR-1.1a, CIR-1.3, CIR-1.4, CIR-2.1, CIR-2.1a, CIR-4.1a, CIR-4.1b, CIR-4.1c, CIR-4.1d, CIR-4.2, CIR-4.2a, CIR-4.2b, CIR-4.3a, CIR 4.3a, CIR 4.3d, CIR-1.3a, CIR-5.1, CIR-5.1a, CIR-5.1b, CIR-5.2, CIR-5.2a, CIR-5.3, CIR-5.3a.

Open Space: OS-2.1, OS-2.1a, OS-2.1b, OS-2.1c, OS-2.1d, OS-2.1e, OS-2.3, OS-2.3a, OS-2.4, OS-2.4a, OS-2.5a, OS-2.6, OS-2.6a, OS-2.6b, OS-2.6c, OS-2.6d, OS-2.6e, OS-2.6e, OS-2.6f, OS-2.6g, OS-2.6h, OS-2.6i, OS-2.6j, OS-2.6k, OS-2.6l.

Land Use: LU-8.1

Policy CIR-1.1 would ensure that Levels of Service (LOS) and on roadways and at intersections are maintained or enhanced, which would allow for better traffic flow and reduce idling times. Implementation Measure CIR-4.1a and Implementation Measure CIR-4.1b requires the implementation of the Tehama County Bikeways Plan and requires the establishment of pedestrian and bicycle access standards and require developers to finance and install pedestrian walkways, equestrian trails, and multi-use trails and facilities in new development. Implementation Measure CIR-4.1c requires the County to actively identify and pursue available funding sources for the planning, development, and improvement of bicycle and pedestrian facilities including: development of a Capital Improvement Program (CIP), funding through public and private organizations and agencies, and other options. Implementation Measure CIR-4.1d requires the County to support and encourage programs to educate, inform, and promote the use of non-motorized travel options including a local bicycle safety awareness program targeted specifically to school students.

Policy CIR-4.2 and Implementation Measure CIR-4.2a requires the County to encourage and support the improvement of bicycle lanes and pedestrian paths as part of the Safe Routes to School Program and work with various local agencies and the Tehama County School Districts to identify those routes that are critical for Safe Routes to School improvements. Implementation Measure CIR-4.2b compels the County to actively identify and pursue available funding sources for the Safe Routes to School Program to assist in the funding of improvements.

³ 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.

Policy CIR-4.3 and Implementation Measure CIR-4.3a requires the County to encourage the use of pedestrian pathways and sidewalks where feasible as a component of the County's circulation system and requires all future subdivision designs to address the need for pedestrian circulation.

Implementation Measure CIR-1.3a states that all proposed development will mitigate its proportionate share of impacts on the County roadways, transit, and pedestrian systems. General Plan Policy CIR-5.1, Implementation Measure CIR-5.1a, and Implementation Measure CIR-5.1b requires the County to provide convenient and accessible transit facilities for the elderly, youth, commuters, and persons with disabilities, implement land use decisions that are consistent with the Transit Development Plan and Tehama County Bus Stop Standards Policies and Procedures and promote the use of car pools, van pools, and park and ride lots.

Policy CIR-5.2 and Implementation Measure CIR-5.2a expands the number of public transit stops and locations throughout the County and requires new developments to install bus turnouts, shelters, and other transportation-related improvements. Policy CIR-5.3 and Implementation Measure CIR-5.3a ensures that Tehama County Transit Agency's comments on development proposals are implemented as part of the development review process.

General Plan Policy OS-2.1 would require that all new development projects in the County incorporate appropriate measures to reduce impacts to air quality. Implementation Measure OS-2.1a would require that all project proponents coordinate with the Tehama County Air Pollution Control District (TCAPCD) on appropriate methodologies for evaluating project emissions and air quality impacts (e.g., emissions modeling software, TCAPCD's thresholds of significance, etc.). Implementation Measure OS-2.1b would require that all new development projects that exceed TCAPCD's thresholds of significance incorporate design, construction, and/or operational features that will result in a reduction in emissions when compared to an "unmitigated baseline" project. Implementation Measure OS-2.1c would require that the County monitor all new development required air quality mitigations and if mitigations are not being managed properly, take appropriate steps to correct the situation. Implementation Measure OS-2.1d would require dust-free, all-weather sealed surface roads in all new subdivisions and new commercial developments. Implementation Measure OS-2.1e would require that all new wood burning fireplaces and stoves meet the requirements of TCAPCD Rule 4:27; Fireplace and Solid Fuel Heating Device Usage.

Policy OS-2.3 promotes a compact and efficient land development pattern. Implementation Measure OS-2.3a encourages mixed-use developments that put residences in close proximity to services, employment, transit, schools, and civic facilities/services.

Policy OS-2.4 encourages the use of alternative modes of transportation by incorporating public transit, bicycle, and pedestrian modes into the County planning processes. Implementation Measure OS-2.4a encourages new developments to provide pedestrian and bicycle facilities, trails, and connections.

Implementation Measure OS-2.5a would require that the County coordinate with TCAPCD through the environmental review process to ensure that proposed projects do not significantly affect the region's ability to meet State and Federal air quality standards.

Policy OS-2.6 promotes improved air quality through energy conservation measures for new and existing development. Implementation Measure OS-2.6a would require that energy-conserving features be included in the design and construction of new development. Implementation

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Measure OS-2.6b would encourage the use of cost-effective and innovative emission-reduction technologies in building components and design. Such technologies may include the use of solar equipment, light-emitting diode (LED) and compact florescent lighting, and the use of external electric outlets to allow for the use of non-gasoline powered lawn equipment. Implementation Measures OS-2.6c and OS-2.6d promote the use of building materials and methods that increase efficiency beyond State Title 24 standards and the use of "EPA Energy Star"-certified appliances. Implementation Measure OS-2.6e and OS-2.6f promote the implementation of sustainable design strategies for "cool communities" and the incorporation of energy-conserving design and construction techniques in all facilities. Implementation Measure OS-2.6g supports vehicle improvements and the use of clean vehicles that reduce emissions and improve air quality. Implementation Measure OS-2.6h would require the replacement of the County's fleet vehicles with new vehicles that utilize the lowest emission technology available. Implementation Measure OS-2.6i would allow preferential treatment to contractors using reduced emission equipment for County construction projects and for County contracts for services (e.g., garbage collection). Implementation Measure OS-2.6j encourages the use of lowest emission technology buses and vehicles in public transit fleets. Implementation Measure OS-2.6k would require that the County consider adoption of an ordinance that limits the amount of time diesel-powered trucks, buses, and other heavy vehicles may idle. Implementation Measure OS-2.6l encourages the replanting of an equal or greater number of trees upon the removal of trees for construction purposes.

Policy LU-8.1 would require that lands for moderate- to large-scale industrial and commercial development be located within or near the Urban Center and Town Center community types, be located within areas for which Specific Plans or Master Plans have been prepared or be located within areas that contain infrastructure adequate to support the use of the property for a non-residential purpose. The policy would also require that the County consider the location of such land uses, where appropriate, to reduce travel and commute times and where appropriate to minimize the need to utilize highways and interstate roadways for service trips.

Mitigation Measures

The proposed 2008-2028 General Plan policies and implementation measures listed above would reduce potential mobile and stationary source air quality impacts. The air quality analysis completed for the project, based on the projected population, number of housing units and commercial/industrial/office square footage, show that under the 2008-2028 planning period conditions operational air quality pollutants are projected to be: ROG (8,242.6 lbs/day), NO_x (6,102.8 lbs/day), PM₁₀ (6,037.5 lbs/day), and PM_{2.5} (2,556.2 lbs/day) (see **Table 4.3-3**). While the proposed policies and implementation measures would assist in reducing the stationary and mobile air quality impacts associated with implementation of the 2008-2028 General Plan, ultimately the fact remains that the land uses proposed are more intense than the assumptions for development of the area contained in the 2006 NSVAB Air Quality Attainment Plan. The effectiveness of above listed policies and actions to effectively reduce air emissions below levels projected in the Attainment Plan is currently unknown. It must be assumed that there is a possibility that the more intensive development proposed would violate an air quality standard or contribute substantially to an existing or projected air quality violation. For these reasons, the impact is considered **significant and unavoidable**.

Sources of Toxic Air Contaminants

Impact 4.3.4 Implementation of the proposed 2008-2028 General Plan may result in sources of toxic air contaminants. These sources may in turn affect surrounding land

uses. Sensitive land uses may also be developed near existing sources of toxic air contaminants. This impact is considered **potentially significant**.

Implementation of the proposed General Plan may result in the development of 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 4.3-4** displays potential sources of TAC emissions for various land uses proposed under the General Plan. Diesel exhaust particulate was recently added to the California Air Resources Board (ARB) list of TACs. Activities involving long-term use of diesel powered equipment and heavy-duty trucks contribute significantly to TAC levels.

**TABLE 4.3-4
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
Electrical Manufacturing	Polychlorinated Biphenyls (PCBs), Cadmium, Chromium, Nickel
Gasoline Station	Benzene, Methyl-Tertiary Butyl Ether (MTBE)
Hospital	Dioxin, Cadmium, Ethylene Oxide
Medical Equipment Sterilization	Ethylene Oxide
Power Plants	Benzene, Formaldehyde, Particulate Matter
Printing Services	Ethyl Benzene, Ethylene Glycol, Xylene
Solid Waste Facilities	Benzene, Vinyl Chloride, Diesel Particulate Matter
Wastewater Treatment	Benzene, Carbon Tetrachloride, Ethylene Dichloride, Chloroform

Source: California Air Resources Board, 2005

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 TCAPCD 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 a regulatory 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 and the purchase of emission off-sets for industrial 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

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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 TCAPCD Air Quality permits, compliance with all District, state and federal regulations regarding stationary and TACs, the use of Best Available Control Technology (BACT) and the purchase of emission off-sets for industrial sources would 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 the Planning Area are primarily associated with the operation of school buses and diesel-powered delivery trucks associated with roadways and commercial, retail and industrial uses in the Planning Area.

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, ARB adopted an 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 5 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 5 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 ARB, 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, ARB 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 five minutes under most circumstances. ARB is currently evaluating additional ATCMs intended to further reduce TACs associated with commercial operations, including a similar requirement to limit idling of smaller diesel-powered commercial vehicles. However, these provisions do not address diesel emissions for truck traffic along roadways in the Planning Area.

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 2008-2028 General Plan and the uncertainty of future development types. As a result, exposure of sensitive receptors to mobile-source TACs is considered a potentially significant impact.

Short-term Construction Sources

Implementation of the 2008-2028 General Plan Project 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 ARB 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 of 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, however, even with the dispersive properties of diesel PM, short-term construction activities could expose sensitive receptors to levels that exceed applicable standards, therefore this is considered a potentially significant impact.

Airports

There are two publicly-owned general aviation airports in Tehama County; Red Bluff Municipal Airport and Corning Municipal Airport. The Red Bluff Municipal Airport is classified as a "community airport," providing full service for general aviation. It has a runway length of 5,684 feet, width of 100 feet, and accommodates IFR (Instrument Flight Rules) and VFR (Visual Flight Rules) operations. Corning Municipal Airport is also rated as a "community airport". It has a 2,700-foot runway, 50 feet in width, with 25-foot wide taxiways. Based upon information from the Federal Aviation Administration (FAA), the Red Bluff Municipal Airport has estimated annual operations (take-offs and landings) of approximately 26,150. The Corning Municipal Airport has an estimated 8,718 annual operations. The FAA reports that there are approximately 67 aircraft based year-round at the Red Bluff Municipal Airport. Approximately 25 aircraft are based at the Corning Municipal Airport.

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

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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 airports have the potential to expose sensitive receptors to TAC emissions to an extent that health risks could result. However, the Red Bluff and Corning Municipal Airports are considerably smaller in size compared to O'Hare International Airport and this issue is not well understood at this time. Therefore, any conclusions regarding health risks would be speculative. Additionally, neither airport is listed on the HARP facilities database. Therefore, no impact conclusion can be made based on research of this issue.

Proposed General Plan Policies and Implementation Measures that Mitigate Potential Impacts

The following 2008-2028 General Plan policies and action items provide some mitigation of buildout air quality impacts:

Open Space: OS-2.1a, OS-2.1b, OS-2.1c, OS-2.5a, OS-2.6j, OS-2.6k, OS-2.6m.

General Plan Implementation Measure OS-2.1a requires all project proponents to coordinate with Tehama County Air Pollution Control District (TCAPCD) on appropriate methodologies for evaluating project emissions and air quality impacts (e.g., emissions modeling software, TCAPCD's thresholds of significance, etc.). Implementation Measure OS-2.1b requires all new development projects that exceed TCAPCD's thresholds of significance to incorporate design, construction, and/or operational features that will result in a reduction in emissions when compared to an "unmitigated baseline" project. Implementation Measure OS-2.1c requires the County to monitor all new development required air quality mitigations. If mitigations are not being managed properly, the appropriate steps to correct the situation will be taken. Implementation Measure OS-2.5a requires that the County coordinate with TCAPCD 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. Implementation Measure OS-2.6j encourages the use of lowest emission technology buses and vehicles in public transit fleets. Implementation Measure OS-2.6k requires the County to consider adoption of an ordinance that limits the amount of time diesel-powered trucks, buses, and other heavy vehicles may idle. Implementation Measure OS-2.6m requires the utilization of the California Air Resources Board Air Quality and Land Use Handbook: A Community Health Perspective when evaluating new development requests that either would generate toxic air contaminant emissions near sensitive receptors or locate new sensitive receptors near existing sources of air toxic emissions or order to minimize health hazards.

While the policies and implementation measures listed above may reduce TAC impacts to sensitive receptors, the language used in some of the policies or implementation measures is too ambiguous to guarantee this reduction. Therefore additional mitigation measures are required.

Mitigation Measures

MM 4.3.4a The following change shall be made to 2008-2028 General Plan Implementation Measure OS-2.6k

The County shall ~~consider adoption of~~ adopt an ordinance that limits the amount of time diesel-powered trucks, buses, and other heavy vehicles may idle in accordance with California Air Resources Board rules for mobile Toxic Air Contaminant sources.

Implementation of the above 2008-2028 General Plan policies, implementation measures and mitigation measure **MM 4.3.4a** would reduce potential stationary, mobile and construction TAC source impacts. However, implementation of the 2008-2028 General Plan would still substantially contribute to these TAC source emissions as a result of increased urban development. Thus, this impact is considered **significant and unavoidable**.

Exposure of Sensitive Receptors

Impact 4.3.5 Implementation of the 2008-2028 General Plan may result in the exposure of sensitive receptors to construction and/or long-term odorous emissions. This impact is considered **potentially significant**.

Implementation of the proposed 2008-2028 General Plan would allow for the development of uses that have the potential to produce odorous emissions either during the construction or operation of the development. Additionally, implementation of the 2008-2028 General Plan 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 by sensitive receptors would be limited.

While the human nose is the sole sensing device for odors, TCAPCD has adopted a nuisance rule that addresses odor exposure. Rule 4:4 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. The provisions of Rule 4:4 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 TCAPCD can require the identified source to incorporate mitigation measures to correct the nuisance condition.

Proposed General Plan Policies and Implementation Measures that Mitigate Potential Impacts

The following 2008-2028 General Plan policies and action items provide some mitigation of buildout air quality impacts:

Land Use: LU-2.2a

Open Space: OS-2.2, OS-2.2b.

General Plan Implementation Measure LU-2.2a requires the establishment of a minimum 300-foot residential building setback between any new residential land divisions (subdivision or parcel map) and classified agricultural lands, agricultural processing facilities, or industrial lands. Policy OS-2.2 requires the County to avoid siting sensitive land uses in the vicinity of agricultural processing, industrial, or other uses where odors or emissions could adversely affect the sensitive use. Implementation Measure OS-2.2b requires the County to work, through the development review process, to minimize potential adverse effects of emissions and odors generated by industrial uses on a community.

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While the policies and implementation measures listed above may reduce odor impacts to sensitive receptors, the language used in some of the policies or implementation measures is too ambiguous to guarantee this reduction. Therefore, additional mitigation measures are required.

Mitigation Measures

MM 4.3.5 The following mitigation measure shall be added as a new policy under General Plan Goal OS 2:

Require odor impact analyses be conducted for evaluating new development requests that either could generate objectionable odors that may violate TCAPCD Rule 4:4 or any subsequent rules and regulations regarding objectionable odors near sensitive receptors or locate new sensitive receptors near existing sources of objectionable odors. Should objectionable odor impacts be identified, odor mitigation shall be required in the form of setbacks, facility improvements or other appropriate measures.

Implementation of the 2008-2028 General Plan policies, action items and mitigation measure **MM 4.3.5** listed above require the protection of sensitive receptors from incompatible land uses. Therefore, this impact is considered **less than significant**.

4.3.4 CUMULATIVE SETTING, IMPACTS AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for air quality includes existing, approved, proposed and reasonably foreseeable development within the Northern Sacramento Valley Air Basin, which is a seven-county region. All but two of the counties in the NSVAB are in nonattainment status of state standards for ozone. Glenn and Colusa Counties are in “nonattainment-transitional” status. Butte, Yuba and Sutter Counties are in nonattainment status for federal 1-hour ozone standards, while Butte County and southern Sutter County are in nonattainment status for the federal 8-hour ozone standard. All other counties are in attainment or unclassified status for the federal ozone standards.

All of the seven counties in the NSVAB are in nonattainment status for state standards for PM₁₀. All counties in the NSVAB are in unclassified status for federal PM₁₀ standards. All counties also are in unclassified status for state PM_{2.5} standards except for Butte County, which is in nonattainment status. The entire NSVAB is in attainment or unclassified status for all other federal and state criteria pollutants. Because the timing of attainment status for NSVAB is unknown, the cumulative setting for air quality assumes nonattainment status of ozone and PM₁₀.

The Air Districts in the NSVAB have adopted the 2006 Air Quality Attainment Plan. This Plan was developed for the purpose of achieving and maintaining healthful air quality throughout the air basin. Like the previous Attainment Plans, the 2006 Plan focused on the adoption and implementation of control measures for stationary sources, area wide sources, indirect sources, and addressed public education and information programs. The 2006 Plan also addressed the effect that pollutant transport has on the NSVAB’s ability to meet and attain the State standards. Ozone trends are variable and unique for each District within the NSVAB. During the past three-year period, Anderson-Shasta County, Sutter Buttes-Sutter County and Paradise-Butte County monitors experienced the highest number of ozone violations in the basin. Ozone concentrations in the NSVAB have remained relatively constant over the past three years, while population and vehicle miles traveled increased during the same period. Ozone concentrations increased

appreciably in Anderson-Shasta County, largely due to unfavorable meteorological conditions (NSVAB, page 7).

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Regional Air Quality Impacts

Impact 4.3.6 Implementation of the 2008-2028 General Plan along with potential development of the Planning Area would exacerbate existing regional problems with ozone and particulate matter. The General Plan's contribution to these conditions is considered **cumulatively considerable**.

In order to reduce the number of vehicle miles traveled in the County, the 2008-2028 General Plan proposes to increase residential densities adjacent to the I-5 corridor in the northern portion of the County. This, along with policies that support mixed-use development, alternative modes of transportation, energy conservation measures, and retention and replacement of vegetation, would serve to improve air quality in the County. However, over the life of the 2008-2028 General Plan some of these same policies may result in substantial new development and increased population that would in turn adversely impact regional air quality. The 2008-2028 General Plan would allow for the potential construction of approximately 45,374 dwelling units and 657 acres of commercial, industrial, and office uses over existing General Plan buildout conditions. The growth in population and business activity, along with the corresponding increase in vehicle usage, when considered with growth proposed under the 2008-2028 General Plan, would contribute to cumulative regional air quality impacts. It also could potentially delay attainment of standards for which counties in the NSVAB currently are in nonattainment status, mainly ozone and PM₁₀.

Air pollutant transport from the Broader Sacramento Area has an affect in the NSVAB by adding to the ozone problem within the NSVAB. Ozone precursors are emitted as part of the exhaust of internal combustion engines in the BSA and are transported northward via the prevailing winds. However, neither Tehama County nor the TCAPCD can control the growth or emissions from neighboring jurisdictions. Therefore, the emissions from the BSA will continue to impact the NSVAB for the foreseeable future.

Mitigation Measures

Implementation of the 2008-2028 General Plan policies, implementation measures and mitigation measures identified under **Impact 4.3.1** through **Impact 4.3.5** would assist in reducing the General Plan's contribution to cumulative regional and local air quality impacts; however, this contribution is still considered **cumulatively considerable** and thus a **significant and unavoidable** impact. No feasible mitigation is available to mitigate this impact.

4.3.5 REFERENCES

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