

4.3 AIR QUALITY

INTRODUCTION

The Air Quality chapter describes the impacts of the General Plan Update study area on local and regional air quality. The chapter was prepared using thresholds of significance recommended by the Feather River Air Quality Management District. The chapter describes existing air quality; direct and indirect emissions associated with the project; the impacts of these emissions on both the local and regional scale; and mitigation measures warranted to reduce or eliminate any identified significant impacts. The following impact assessment is based on information provided by the *Wheatland General Plan Update Background Report*¹ (2004) and the *Air Report* (2005),² prepared by Don Ballanti, certified consulting meteorologist.

ENVIRONMENTAL SETTING

Air Pollution Climatology

The City of Wheatland is located in the northeastern portions of the Sacramento Valley, a broad, flat valley bounded by the coastal ranges to the west and the Sierra Nevada to the east. The entire air basin is about 200 miles long in a north-south direction, and has a maximum width of about 150 miles, although the valley floor averages only about 50 miles in width.

The climate of the project area is characterized by hot, dry summers and cool, wet winters. During the summer months from mid-April to mid-October, significant precipitation is unlikely and temperatures range from daily maxima approaching 100 degrees F to evening lows in high 50s and low 60s. Winter conditions are characterized by occasional rainstorms interspersed with stagnant and sometimes foggy weather. Winter daytime temperatures average in the low 50s and nighttime temperatures average in the upper 30s.

Wind direction is primarily up- and down-valley 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.

In addition to prevailing wind patterns that control the rate of dispersion of local pollutant emissions, Yuba County experiences two types of inversions that affect the air quality. The first type of inversion layer contributes to photochemical smog problems by confining pollution to a shallow layer near the ground, which occurs in the summer when sinking air forms a "lid" over the region. The second type of inversion occurs when the air near the ground cools while the air aloft remains warm. The inversions occur during

winter nights and can cause localized air pollution "hot spots" near emission sources because of poor dispersion.

Ambient Air Quality Standards

Both the U. S. Environmental Protection Agency and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants, which represent safe levels that 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 federal and California State ambient air quality standards are summarized in Table 4.3-1.

Pollutant	Averaging Time	Federal Primary Standard	State Standard
Ozone	1-Hour	0.12 PPM	0.09 PPM
	8-Hour	0.08 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	0.05 PPM	--
	1-Hour	--	0.25 PPM
Sulfur Dioxide	Annual Average	0.03 PPM	--
	24-Hour	0.14 PPM	0.05 PPM
	1-Hour	--	0.25 PPM
PM ₁₀	Annual Average	50 µg/m ³	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	65 µg/m ³	--
Lead	Calendar Quarter	1.5 µg/m ³	--
	30 Day Average	--	1.5 µg/m ³
Sulfates	24 Hour	25 µg/m ³	--
Hydrogen Sulfide	1-Hour	0.03 PPM	--
Vinyl Chloride	24-Hour	0.01 PPM	--
PPM = Parts per Million µg/m ³ = Micrograms per Cubic Meter Source: California Air Resources Board, Ambient Air Quality Standards (5/6/05) http://www.arb.ca.gov/aqs/aaqs2.pdf			

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 State of California standards are more stringent, particularly for ozone and particulate matter (PM₁₀ and PM_{2.5}).

The State of California regularly reviews scientific literature regarding the health effects and exposure to PM and other pollutants. On May 3, 2002, the CARB staff recommended lowering the level of the annual standard for PM₁₀ and establishing a new annual standard for PM_{2.5} (particulate matter 2.5 micrometers in diameter and smaller). The new standards became effective on July 5, 2003.

On April 28, 2005 the CARB established a new 8-hour standard for ozone (0.07 PPM), expected to become effective in early 2006.

Toxic Air Contaminants

In addition to the criteria pollutants discussed above (which have ambient air quality standards), toxic air contaminants (TACs) are another group of pollutants of concern. Unlike criteria pollutants, no safe levels of exposure to TACs can be established. Many different types of TACs exist 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.

In 1998, after a 10-year scientific assessment process, the CARB identified particulate matter from diesel-fueled engines as a 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.

The State of California has begun a program of identifying and reducing risks associated with particulate matter emissions from diesel-fueled vehicles. 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.³

The CARB recently published an air quality/land use handbook. 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 CARB handbook recommends that planning 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 designating new, sensitive land uses:

- 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 gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater).

Pollutants Affecting Wheatland's Air Quality

The State and National ambient air quality standards cover a wide variety of pollutants. Only a few of these pollutants are problems in the Wheatland area either due to the strength of the emission or the climate of the region. The closest monitoring site to the City of Wheatland is in Yuba City, where concentrations of ozone, PM₁₀, PM_{2.5}, carbon monoxide and nitrogen dioxide are measured. Table 4.3-2 below summarizes violations of air quality standards in Yuba City for the five-year period 1999-2004.

Pollutant	Standard	Days Standard Exceeded In:				
		2000	2001	2002	2003	2004
Ozone	Federal 1-Hour	0	0	0	0	0
Ozone	State 1-Hour	3	4	3	0	2
Ozone	Federal 8-Hour	1	1	3	0	0
PM ₁₀	Federal 24-Hour	0	0	0	0	0
PM ₁₀	State 24-Hour	5	8	4	5	16
PM _{2.5}	Federal 24-Hour	0	0	0	0	0
Carbon Monoxide	State/Federal 8-Hour	0	0	0	0	0
Nitrogen Dioxide	State 1-Hour	0	0	0	0	0

Source: Air Resources Board, Aerometric Data Analysis and Management (ADAM), 2005. (<http://www.arb.ca.gov/adam/cgi-bin/adamtop/d2wstart>)

Table 4.3-2 shows that the federal ambient air quality standards are met, but the more stringent state standards for ozone and PM₁₀ are exceeded. The following is a description of problem pollutants in the Feather River Air Quality Management District (FRAQMD).

Ozone

Ozone is the main component of photochemical smog. Ozone is not emitted directly into the air, but is formed through a series of chemical reactions involving other compounds that are directly emitted. These directly emitted pollutants (also known as ozone precursors) include reactive organic gases (ROG) and nitrogen oxides (NO_x).

The time period required for ozone formation allows the reacting compounds to spread over a large area, producing a regional pollution problem. Ozone problems are the cumulative result of regional development patterns, rather than the result of a few significant emission sources.

Once formed, ozone remains in the atmosphere for one to two days. Ozone is then eliminated through chemical reaction with plants (reacts with chemical on the leaves of plants), rainout (attaches to water droplets as they fall to the earth) and washout (absorbed by water molecules in clouds and later fall to the earth with rain).

Ozone is a public health concern because it is a respiratory irritant that increases susceptibility to respiratory infections. Ozone causes substantial damage to leaf tissues of crops and natural vegetation and damages many materials by acting as a chemical oxidizing agent.

Particulate Matter

Suspended particulate matter (PM) is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, and dust. "Inhalable" PM consists of particles less than 10 microns in diameter, and is defined as "suspended particulate matter" or PM₁₀. Fine particles are less than 2.5 microns in diameter (PM_{2.5}). PM_{2.5}, by definition, is included in PM₁₀.

In Yuba County PM emissions are generated by a variety of sources. The primary sources of PM are entrained road dust, farming operations, and agricultural burning. Traffic generates particulate matter and PM emissions through entrainment of dust and dirt particles that settle onto roadways and parking lots. PM is also emitted by burning wood in residential woodstoves and fireplaces and open burning of residential and agricultural wastes. Fine particulate matter is a concern because it can bypass the body's natural filtration system more easily than larger particles, and can lodge deep in the lungs. Health effects of PM vary depending on a number of factors, including the type and size of particle. Research has shown a correlation between high PM₁₀ concentrations and increased mortality rates. Elevated levels can aggravate chronic respiratory illness such as bronchitis and asthma. PM also causes visibility reduction.

REGULATORY FRAMEWORK

Feather River Air Quality Management District

The project is located within the Feather River Air Quality Management District (FRAQMD). The FRAQMD is part of the Sacramento Valley Air Basin (SVAB) that includes Butte, Colusa, Glen, Tehama, Shasta, Yolo, Sacramento, Yuba, Sutter, and parts of Placer and Solano Counties. The FRAQMD is the local air quality agency. The District adopts and enforces controls on stationary sources of air pollutants through its permit and inspection programs and regulates agricultural burning. Other District responsibilities include monitoring air quality, preparation of clean air plans and responding to citizen air quality complaints.

The FRAQMD has developed Indirect Source Review Guidelines for use in the environmental evaluation of projects. The guidelines provide project pollutant thresholds that, when exceeded, may be considered a significant air quality effect by the District. The District also provides a minimum list of feasible mitigation measures to reduce the air pollutant impacts from transportation and land-use projects, and a Best Available Mitigation Measures (BAMM) list. The mitigation measures in these guidelines are transportation and land use control measures. They are intended to reduce dependency on the automobile for mobility, and mitigate the air quality impacts of new development.

State/Federal Air Programs

Both the federal and state governments have enacted laws mandating the identification of areas not meeting the ambient air quality standards and development of regional air quality plans to eventually attain the standards. Under the federal Clean Air Act the FRAQMD has been designated attainment or unclassified for all national ambient air quality standards except the 1-hour ozone standard.

Under the State system the FRAQMD is designated non-attainment for the California standards for ozone and PM₁₀. The air districts of the Northern Sacramento Air Basin have jointly prepared and adopted a uniform air quality attainment plan addressing ozone and PM₁₀.⁴

The U. S. Environmental Protection Agency (EPA) has classified Yuba County as an attainment area for the new federal 8-hour ozone standard. The CARB and U. S. EPA designated Yuba County as unclassifiable or attainment with respect to all other federal standards.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

The definition of what is a “substantial contribution to an existing or projected air quality violation” or a “cumulatively considerable net increase” is often defined by local air quality districts. The FRAQMD’s Board of Directors has approved thresholds of significance to be used in the environmental review of development projects under the CEQA. In addition, the CEQA Guidelines environmental checklist provides general definitions of a significant air quality impact. For the Wheatland General Plan Update, a significant air quality impact would result if the project would:

- Conflict with or obstruct implementation of the applicable air plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- Result in an increase in emissions of an ozone precursor (Reactive Organic Gases (ROG) and Nitrogen Oxides (NOx)) greater than 25 pounds per day;
- Result in an increase in emissions of PM₁₀ greater than 80 pounds per day; or
- Generate an excess of 20 parts per million (ppm) 1-hour ambient air quality standard, or 9 ppm 8-hour ambient air quality standard.

Method of Analysis

The Air Report was prepared by Don Ballanti, a certified consulting meteorologist. Estimates of regional emissions generated by project traffic and area sources were made using a program called URBEMIS-2002.⁵ URBEMIS-2002 is a program that estimates the emissions that result from various land use development projects. Inputs to the URBEMIS-2002 program include trip generation rates, vehicle mix, average trip length by trip type and average speed. A detailed discussion of URBEMIS-2002 parameters used in the analysis is included in Appendix of the Air Report (See Attachment E of the EIR for a copy of the Air Report).

A screening procedure for estimating carbon monoxide concentrations was applied to signalized intersections affected by project traffic under buildout traffic conditions. Concentrations at a major signalized intersection would be expected to be the highest carbon monoxide concentrations due to the deceleration, idling and acceleration of vehicles at these locations. Ten intersections were selected for analysis as worst-case locations in that they should be the location of the highest concentrations of carbon monoxide.

The screening procedure contained in *Transportation Project-Level Carbon Monoxide Protocol* was utilized.⁶ The methodology uses estimates of the contributions to carbon monoxide concentrations for a "base case" characterized by a specific intersection configuration, meteorology, traffic volume and indicators of intersection performance. A series of correction factors are then applied to adjust the initial estimates of carbon monoxide concentrations for the specific conditions of the intersection under study. Correction factors are provided by a series of tables.

The screening procedure provides a worst-case estimate of concentrations of carbon monoxide generated by vehicles impacting an intersection. Concentrations were calculated at the corner of the intersection, which would be expected to be the location of the highest carbon monoxide concentrations due to the deceleration, idling and acceleration of vehicles at these locations. Concentrations were estimated for a distance of 7 meters (20 feet) from the roadway edge.

The other contribution to the total concentration is the background level attributed to more distant traffic. The background concentration was estimated using the highest concentration of carbon monoxide measured at the Yuba City monitoring site during the period 2002-2004.

Project-Specific Impacts and Mitigation Measures

4.3-1 Increased potential for air quality land use conflicts.

Buildout of the General Plan Update (GPU) study area would intensify development with a mixture of commercial, employment-generating and residential uses, thereby potentially increasing the potential for air quality-based land use conflicts. Industrial, manufacturing, and some commercial uses have the potential for adversely affecting existing or future residential development through emissions of criteria pollutants, toxic air contaminants, and odors.

Odors, dust, or toxic air contaminants can be emitted by stationary or area sources throughout the study area. The occurrence and severity of potential odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source, the wind speed and direction, and sensitivity of the receiving location. While offensive odors rarely cause physical harm, they can be unpleasant and cause distress among the public and generate citizen complaints. Managing sources of odors is accomplished by regulatory requirements and appropriate land use planning.

Agriculture

Future residential developments are designated adjacent to existing agricultural activities. The potential for nuisance complaints when inadequate buffer zones are provided may adversely affect sensitive land uses through odors, smoke from agricultural burning, dust from tilling, discing and travel on unpaved roads, and

inadvertent overspray of pesticides. As with odors, potential impacts from agricultural dust depends on the frequency and intensity of the source, wind speeds and directions, and the sensitivity of the receiving location.

Existing agricultural operations adjacent to the study area include orchards and row crops, along with some grazing and fallow lands. The development of some of the land uses proposed within the study area that are either adjacent to or in close proximity to grazing activities could have air quality land use conflicts between uses. For instance, odors and flies from cattle grazing activities could be a nuisance to potential residents in close proximity to the cattle. The use of pesticides or herbicides to control weeds and pests on the grazing land could cause health problems for potential residents in the study area. The grazing operations could have impacts associated with nuisances and hazards, such as pesticide, herbicide and fungicide use on the agricultural properties adjacent to residential areas, as well as odors, dust, and slow moving vehicles on area roads.

Roadways

Carbon monoxide is directly emitted by internal combustion engines, and therefore occurs at elevated concentrations near roadways. At heavily used or congested roadways and intersections, carbon monoxide levels may exceed State and federal standards, creating adverse impacts to existing and proposed sensitive receptors. Because future development would result in increased carbon monoxide emissions from increased project-generated motor vehicle trips, air quality land use conflicts may occur.

The recently published *Air Quality and Land Use Handbook* produced by CARB makes recommendations, including but not limited to, "Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day or rural roads with 50,000 vehicles per day". Presently, the most traveled highway in Wheatland is State Route (SR) 65, which carries roughly 21,000 vehicles per day, which is well below the threshold of 100,000. In addition, the future predicted traffic volumes are not anticipated to exceed 100,000 vehicles/day on urban roads, or 50,000 vehicles/day on rural roads. However, the General Plan Land Use Diagram indicates that residential land uses are proposed to be located within 500 feet of the future SR 65 Bypass at the southeastern portion of the study area.

The General Plan Update includes the following goals and policies related locating sensitive land uses.

Goal 1.C To provide for new residential development in planned neighborhoods to be developed in an orderly style and designed to promote walking, bicycling, and transit use.

Policy 1.C.4 The City shall require that development plans for new residential neighborhoods address the following:

- a. The distribution, location, and extent of land uses, including standards for land use intensity.
- b. Compatibility of new development with adjacent existing and proposed development.
- c. Provision of a range of housing types to ensure socially and economically-integrated neighborhoods.
- d. Distribution and location of roadways, including design standards for and the precise alignment of arterial, collector, and local streets, and bikeways.
- e. Provisions for the extension of the existing city roadway system into new development areas. New development shall be linked to adjacent existing neighborhoods and planned neighborhoods by collector and local streets.
- f. Provisions for adequate schools and child care facilities.
- g. Distribution and location of neighborhood commercial centers, parks, schools, child care centers, and other public- and quasi-public facilities.
- h. Provisions for linking residential neighborhoods, parks, schools, Downtown, shopping areas, and employment centers through a system of pedestrian pathways, bicycle routes, and linear open-space corridors along sloughs, Dry Creek, and the Bear River.
- i. Provisions for development phasing to ensure orderly and contiguous development consistent with population projections of the General Plan, and Policy 1.A.4.
- j. Provisions for minimizing conflicts between new development and agricultural uses.

Goal 1.G To support development of employment uses to meet the present and future needs of Wheatland residents for jobs and to maintain Wheatland's economic vitality.

Policy 1.G.2 The City shall only approve new employment development that has adequate infrastructure and services. Employment development shall be required to provide sufficient buffering from residential areas to avoid impacts associated with noise, odors and the potential release of hazardous materials.

Policy 1.G.7 The City shall ensure that intensive industrial or manufacturing uses are located in areas compatible with adjacent use.

Goal 1.I To maintain the productivity and minimize developments affects on agricultural lands surrounding Wheatland.

- Policy 1.I.1 The City shall discourage leapfrog development and development in peninsulas extending into agricultural lands to avoid adverse effects on agricultural operations.
- Policy 1.I.2 The City shall require residential development within or adjacent to agricultural areas to provide a buffer in order to minimize conflicts with adjacent agricultural uses.
- Policy 1.I.4 The City shall promote good neighbor policy between residential property owners and adjacent farming operations by supporting the right of farmers and ranchers to conduct agricultural operations in compliance with state laws.

General Plan Update policies do not address potential air quality land use conflicts related to mobile sources of Toxic Air Contaminants. In addition, residential land uses are proposed to be located adjacent to the future SR 65 Bypass. Therefore, this impact would be *potentially significant*.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the impact to *less-than-significant* level.

4.3-1 *Add to Policy 1.C.4 the following:*

- k. Provisions for minimizing the exposure of residences, schools, childcare facilities and other sensitive receptors to mobile source Toxic Air Contaminants from major traffic sources.*
- l. The City shall consider the recommendations of the Air Quality and Land Use Handbook (April 2005) in reviewing new development projects.*

4.3-2 Changes in local carbon monoxide levels

As described above, carbon monoxide is directly emitted by internal combustion engines, and therefore occurs at elevated concentrations near roadways. Carbon monoxide is a problem in wintertime when stagnant meteorological conditions occur (i.e., very little vertical or horizontal mixing of air in the lower atmosphere). At heavily used or congested roadways and intersections, carbon monoxide levels may exceed State and federal standards.

Existing concentrations of carbon monoxide are low due to the low background levels and relatively low volumes of vehicles operating on the streets of Wheatland. Development of the land uses and circulation improvements in accordance with the General Plan Update would result in increased traffic that could result in increased concentrations of carbon monoxide.

Future development would result in increased carbon monoxide emissions from increased project-generated motor vehicle trips. Counteracting the effect are emission control programs that are in place at the State and federal level to reduce carbon monoxide emissions from new motor vehicles.

Carbon monoxide emissions at congested intersections, where motor vehicles slow down and idle, can under certain conditions exceed the 20 parts per million (ppm) 1-hour ambient air quality standard, or 9 ppm 8-hour ambient air quality standard. Intersections operating at level of service (LOS) D or better are not normally expected to cause substantial carbon monoxide buildup, because at these intersections, carbon monoxide concentrations are better able to dissipate. At intersections operating at LOS E or F, carbon monoxide buildup is more likely, yet still uncommon. As described in the Transportation Chapter 4.15, the General Plan Update would not cause any proposed intersections in the study area under the 2025 conditions to operate at LOS E or F.

Future local carbon monoxide levels with proposed project were also modeled using a screening model. The results of the modeling for the ten intersections are shown in Table 4.3-3 for the year 2025. The concentrations in Table 4.3-3 are to be compared to the State and federal ambient air quality standards: predicted 1-hour concentrations are to be compared to the state standard of 20 PPM and the federal standard of 35 PPM; predicted 8-hour concentrations are to be compared to the State and federal standard of 9 PPM.

Table 4.3-3 Predicted Year 2025 Worst-Case Carbon Monoxide Concentration, In Parts Per Million		
Intersection	Predicted 1-Hour Average Concentration	Predicted 8-Hour Average Concentration
SR 65/North Ring Road	13.2	7.9
SR 65/McDevitt Drive	7.5	4.5
Wheatland Road/Oakley Lane	7.2	4.3
SR 65/First Street	7.9	4.7
Spenceville Road/Ring Road	10.5	6.3
Spenceville Road/ SR 65 Bypass SB Ramps	10.2	6.1
SR 65/Main Street	8.7	5.2
South Ring Road/Malone	7.9	4.8
South Ring Road/ S. Loop Ramp Connectors	8.2	4.9
SR 65/ Loop Ramp	7.8	4.7
<i>Source: City of Wheatland Air Report (2005)</i>		

The modeling results indicate that future year 2025 carbon monoxide levels would be below the State and federal air quality standards. Predicted future levels

of carbon monoxide at the selected "hot spot" intersections would meet the 20 ppm 1-hour and 9 ppm 8-hour state/ federal ambient air quality standards.

The General Plan Update includes the following goals and policies that would affect congestion levels on roadways and would also affect concentrations of carbon monoxide near these roadways.

- Goal 2A To provide for the long-range planning and development of the City's roadway system to ensure the safe and efficient movement of people and goods.
- Policy 2.A.2 The City shall develop and manage its roadway system to maintain LOS "C" or better on all roadways, except within one-quarter mile of state highways. In these areas, the City shall strive to maintain LOS " D" or better.
- Policy 2.A.3 The City shall identify economic, design and planning solutions to improve existing levels-of-service currently below the LOS specified above. Where physical mitigation is infeasible, the City shall consider developing programs that enhance alternative access or otherwise minimize travel demand.
- Policy 2.A.5 The City shall strive to meet the level of service standards through a balanced transportation system that provides alternatives to the automobile and by promoting pedestrian, bicycle, and transit connections between employment areas and major residential and commercial areas.
- Policy 2.A.6 The City shall require an analysis of the effects of traffic from proposed major development projects. Each such project shall construct or fund improvements necessary to mitigate the effects of traffic from the project. Such improvements may include a fair share of improvements that provide benefits to others.
- Poicy 2.A.11 The City shall ensure that highways and arterial streets within its jurisdiction provide for the efficient flow of traffic. Therefore, the following shall be undertaken:
- Minimize the number of intersections along arterials.
 - Reduce curb cuts along arterials through the use of common access easements, backup lots and other design measures.
 - Provide grade separations at all major railroad crossings with arterials, except for an at-grade crossing of the major arterial in the north.

- Extend arterials over waterways, railroads and through developed and undeveloped areas to provide for the continuous flow of through traffic and appropriate area access.

Because carbon monoxide levels associated with the General Plan Update would not exceed State or federal air quality standards, and implementation of the goals and policies above would ensure that the standards are not exceeded, the impact would be *less-than-significant*.

Mitigation Measure(s)

None required.

4.3-3 Construction activities associated with buildout of the General Plan Update study area.

Foreseeable construction activities would occur due to road construction (including grading, rehabilitation, and intersection improvement) and land development (including site preparation, placement of utilities and other infrastructure, placement of foundations for structures, fabrication of structures, or demolition). Construction or demolition activities would be expected to require use of heavy trucks, excavation and grading equipment, jackhammers, concrete mixers, and other miscellaneous mobile and stationary construction equipment. Emissions during construction would be caused by material handling, traffic on unpaved or unimproved surfaces, demolition of structures, use of paving materials and architectural coatings, exhaust from construction worker vehicle trips, and exhaust from diesel-powered construction equipment.

Heavy construction activity on dry soil or dry wind-blown portions of the study area exposed during construction phases could cause emissions of dust (PM₁₀). Reactive organic compounds, nitrogen oxides, carbon monoxide, and additional particulate matter emissions would also occur as a result of diesel fuel combustion by the heavy equipment and construction worker vehicle exhaust.

Presently, FRAQMD is designated nonattainment for the California PM₁₀ health standard, which means that Yuba and Sutter Counties violate the state PM₁₀ air quality health standard. Construction activities, unpaved roads, and windblown dust contribute heavily to these emissions. According to the U.S. EPA, exposure to high concentrations of particulate matter, including airborne dust, affects breathing, aggravates existing respiratory and cardiovascular disease, and alters the body's defenses against foreign materials, lung damage, skin cancer and premature death. Further studies have linked respirable particulate matter with health problems like asthma and chronic bronchitis.

Throughout the construction phase, construction and demolition related emissions would vary day-to-day depending on the specific phase or combination of phases in progress at any given time. When considered in the context of long-term

project operations, construction and demolition-related emissions would be considered short-term and temporary, but these activities could still cause significant effects on local air quality.

Full buildout of the General Plan Update would occur beyond 2025, and the rate of growth would be affected by market conditions, infrastructure capacity, and the City of Wheatland’s proposed growth management policies. Throughout the period, much shorter phases of parcel-by-parcel construction activity (occurring for months at a time) would be expected. The short-term construction and demolition-related activities would result in dust and equipment exhaust emissions that could, at times, contribute to nuisances or deterioration of local air quality.

The CEQA and the FRAQMD thresholds of significance are described in Table 4.3-4. Future developments anticipated in the GPU study area may exceed applicable air quality emission thresholds.

Table 4.3-4 CEQA and FRAQMD Thresholds of Significance (Mass Emission, pounds per day)			
Project Type	Ozone Precursor Emissions		Respirable Particulate Matter Emissions
	NO_x	ROG	PM₁₀
All	25	25	80

Although all projects may not exceed the thresholds, local impacts and cumulative impacts to downwind regions of the Sacramento Valley Air Basin may occur. Therefore, impacts related to construction and demolition activities would be considered *potentially significant*.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impacts to a *less-than-significant* level.

4.3-3(a) *Implement the FRAQMD Fugitive Dust Control Plan, which may be downloaded at <http://www.fraqmd.org/PlanningTools.htm>, and which includes the following measures:*

- *All grading operations on a project should be suspended when winds exceed 20 miles per hour or when winds carry dust beyond the property line despite implementation of all feasible dust control measures.*
- *Construction sites shall be watered as directed by the Department of Public Works or Air Quality Management*

District and as necessary to prevent fugitive dust violations.

- *An operational water truck should be onsite at all times. Apply water to control dust as needed to prevent visible emissions violations and offsite dust impacts.*
- *Onsite dirt piles or other stockpiled particulate matter should be covered, wind breaks installed, and water and/or soil stabilizers employed to reduce wind blown dust emissions. Incorporate the use of approved non-toxic soil stabilizers according to manufacturer's specifications to all inactive construction areas.*
- *All transfer processes involving a free fall of soil or other particulate matter shall be operated in such a manner as to minimize the free fall distance and fugitive dust emissions.*
- *Apply approved chemical soil stabilizers according to the manufacturers' specifications, to all-inactive construction areas (previously graded areas that remain inactive for 96 hours) including unpaved roads and employee/equipment parking areas.*
- *To prevent track-out, wheel washers should be installed where project vehicles and/or equipment exit onto paved streets from unpaved roads. Vehicles and/or equipment shall be washed prior to each trip. Alternatively, a gravel bed may be installed as appropriate at vehicle/equipment site exit points to effectively remove soil buildup on tires and tracks to prevent/diminish track-out.*
- *Paved streets shall be swept frequently (water sweeper with reclaimed water recommended; wet broom) if soil material has been carried onto adjacent paved, public thoroughfares from the project site.*
- *Provide temporary traffic control as needed during all phases of construction to improve traffic flow, as deemed appropriate by the Department of Public Works and/or Caltrans and to reduce vehicle dust emissions. An effective measure is to enforce vehicle traffic speeds at or below 15 mph.*
- *Reduce traffic speeds on all unpaved surfaces to 15 miles per hour or less and reduce unnecessary vehicle traffic by restricting access. Provide appropriate training, onsite enforcement, and signage.*
- *Reestablish ground cover on the construction site as soon as possible and prior to final occupancy, through seeding and watering.*
- *Disposal by Burning: Open burning is yet another source of fugitive gas and particulate emissions and shall be prohibited at the project site. No open burning of vegetative*

waste (natural plant growth wastes) or other legal or illegal burn materials (trash, demolition debris, et. al.) may be conducted at the project site. Vegetative wastes should be chipped or delivered to waste to energy facilities (permitted biomass facilities), mulched, composted, or used for firewood. It is unlawful to haul waste materials offsite for disposal by open burning.

- 4.3-3(b) *Prior to construction activities, the project applicant shall assemble a comprehensive inventory list (i.e. make, model, engine year, horsepower, emission rates) of all heavy-duty off-road (portable and mobile) equipment (50 horsepower and greater) that will be used an aggregate of 40 or more hours for the construction project and apply the following mitigation measure:*
- 4.3-3(c) *Prior to construction activities, the project applicant shall provide a plan for approval by FRAQMD demonstrating that the heavy-duty (equal to or greater than 50 horsepower) off-road equipment to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20 percent NOx reduction and 45 percent particulate reduction compared to the most recent CARB fleet average at time of construction. A Construction Mitigation Calculator (MS Excel) may be downloaded from the SMAQMD web site to perform the fleet average evaluation
<http://www.airquality.org/ceqa/index.shtml>.*
- 4.3-3(d) *During construction, the project contractor shall regulate construction equipment exhaust emissions, as to not exceed FRAQMD Regulation III, Rule 3.0, Visible Emissions limitations (40 percent opacity or Ringelmann 2.0). Operators of vehicles and equipment found to exceed opacity limits shall take action to repair the equipment within 72 hours or remove the equipment from service. Failure to comply may result in a Notice of Violation.*
- 4.3-3(e) *During construction, the project contractor shall be responsible to ensure that all construction equipment is properly tuned and maintained.*
- 4.3-3(f) *During construction, the project contractor shall regulate construction vehicles to minimize idling time to 10 minutes.*
- 4.3-3(g) *During construction, the project contractor shall ensure that an operational water truck is onsite at all times. Apply water to control dust as needed to prevent dust impacts offsite.*

- 4.3-3(h) *During construction, the project contractor shall utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.*
- 4.3-3(i) *During construction, the project contractor shall develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.*
- 4.3-3(j) *During construction, the project contractor shall ensure that no open burning of removed vegetation occurs during infrastructure improvements. Vegetative material should be chipped or delivered to waste to energy facilities.*
- 4.3-3(k) *Portable engines and portable engine-driven equipment units used at the project work site, with the exception of on-road and off-road motor vehicles, may require California Air Resources Board (ARB) Portable Equipment Registration with the State or a local district permit. The owner/operator shall be responsible for arranging appropriate consultations with the ARB or the District to determine registration and permitting requirements prior to equipment operation at the site.*

The above mitigation measures are based on current FRAQMD requirements. Future development applications will be reviewed by the City and the most current air district regulations will be applied.

4.3-4 Regional emissions increases.

Future development emissions would have an effect on air quality within the Sacramento Valley Air Basin. Upon buildout, operation of new uses related to the General Plan Update would cause an increase in emissions by the generation of new motor vehicle trips and by causing energy use and operation of other stationary sources. Workers, residents, occupants, and visitors driving to newly developed areas in the study area would significantly increase the average daily trips by the time of buildout. New residential and commercial land uses associated with the proposed General Plan Update would also result in new emissions from the use of electricity and natural gas combustion for site heating, cooling, ventilation, and lighting. The emissions are stationary- and area-source emissions that would be produced either directly in the study area or indirectly through increased use of utilities located elsewhere. Motor vehicle trips, energy use, and other stationary sources would cause emissions of ROG, NO_x, and PM₁₀ that

would contribute to existing violations of either the State-level or federal ambient air quality standards. Total emissions associated with the General Plan Update are shown in Table 4.3-5 for the two ozone precursors (ROG and NO_x) and PM₁₀.

Table 4.3-5 Project-Related Regional Emissions, Pounds Per Day			
	ROG	NO_x	PM₁₀
Vehicles	370.4	305.2	1217.5
Area Sources	926.4	154.2	1530.2
Total	1298.8	459.4	2747.7
FRAQMD Threshold of Significance	25.0	25.0	80.0

Because ROG and NO_x are summertime pollutants, project impacts on ozone air quality would be a result of summertime emissions. Summertime project-related emissions of ROG and NO_x would exceed the FRAQMD significance threshold, which is 25 pounds per day for both ozone precursors. Project emissions for PM₁₀ are greatest in winter due to wood burning in fireplaces and woodstoves. Project-related winter emissions for PM₁₀ would exceed the FRAQMD threshold of significance of 80 pounds per day.

Future land uses within the commercial and employment-center land use categories may result in new stationary source emissions. Because of the great variation in emissions types and amounts from different uses, it is not possible to predict direct emissions. The FRAQMD has statutory authority over stationary sources of emissions. The FRAQMD 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. The District's rules and regulations impose limits on emissions and require use of Best Available Control Technology (BACT) and purchase of emission off-sets for industrial sources exceeding certain emission levels. These regulations include the identification and quantification of emissions of TAC's and, if warranted, estimation of cancer and non-cancer risk associated with any source.

The General Plan Update includes the following goals and policies related to the air pollutant emission generation from future development.

Goal 1.B To provide adequate land in a range of residential densities to accommodate the housing needs of all income groups expected to reside in Wheatland.

Policy 1.B.3 The City shall discourage the development of isolated, remote, disconnected, and/or gated residential projects, which do not contribute to the sense of an integrated community.

- Policy 1.B.4 The City shall encourage multi-family housing to be located throughout the community, but especially near transportation corridors, Downtown, major commercial areas, neighborhood commercial centers, and employment centers.
- Goal 1.C To provide for new residential development in planned neighborhoods to be developed in an orderly style and designed to promote walking, bicycling, and transit use.
- Policy 1.C.1 The City shall promote new residential development in a range of residential densities that reflects the positive qualities of Wheatland's existing residential neighborhoods (e.g., street trees, pedestrian-orientation, mix of housing types and sizes).
- Policy 1.C.2 The City shall encourage the creation of well-defined residential neighborhoods. Each neighborhood should have a clear focal point, such as a park, school, or other open space and community facility, and shall be designed to promote pedestrian convenience.
- Policy 1.C.3 The City shall encourage the development of new neighborhoods that are walkable and connected to the existing City core as well as each other.
- Policy 1.C.4 The City shall require that development plans for new residential neighborhoods address the following:
- a. The distribution, location, and extent of land uses, including standards for land use intensity.
 - b. Compatibility of new development with adjacent existing and proposed development.
 - c. Provision of a range of housing types to ensure socially and economically-integrated neighborhoods.
 - d. Distribution and location of roadways, including design standards for and the precise alignment of arterial, collector, and local streets, and bikeways.
 - e. Provisions for the extension of the existing city roadway system into new development areas. New development shall be linked to adjacent existing neighborhoods and planned neighborhoods by collector and local streets.
 - f. Provisions for adequate schools and child care facilities.
 - g. Distribution and location of neighborhood commercial centers, parks, schools, child care centers, and other public- and quasi-public facilities.
 - h. Provisions for linking residential neighborhoods, parks, schools, Downtown, shopping areas, and employment centers through a system of pedestrian pathways, bicycle routes, and

linear open-space corridors along sloughs, Dry Creek, and the Bear River.

- i. Provisions for development phasing to ensure orderly and contiguous development consistent with population projections of the General Plan, and Policy 1.A.4.
- j. Provisions for minimizing conflicts between new development and agricultural uses.

Policy 1.C.5 The City shall require residential subdivisions to provide well-connected internal and external street, bicycle, and pedestrian systems.

Policy 1.C.6 The City shall encourage installation of current and emerging technological infrastructure in new and existing development for home telecommuting anti electric vehicles charging.

Goal 1.D To conserve and enhance the best qualities of existing residential neighborhoods as the City grows.

Policy 1.D.3 The City shall encourage infill and reuse in existing neighborhoods that maintain the character and quality of the surrounding neighborhood and does not negatively affect surrounding land uses.

Goal 1.E To designate adequate commercial land for development of local and regional commercial uses compatible with surrounding land uses, that will meet the present and future needs of Wheatland residents and visitors, and enhance Wheatland's economic vitality.

Policy 1.E.4 Commercial facilities should be designed to encourage and promote transit, pedestrian, and bicycle access. The City shall require that new commercial development be designed to encourage and facilitate pedestrian circulation within and between commercial sites and nearby residential areas.

Policy 1.E.5 The City shall require pedestrian and bicycle access in the design of sound walls, buffers, detention basins, fencing or other physical features between commercial and residential uses.

Goal 2.E To promote a safe and efficient transit system to reduce congestion, improve the environment, and provide viable non-automotive means of transportation in and through Wheatland.

Policy 2.E.1 The City shall work with Yuba-Sutter Transit to implement bus transit services that are timely, cost-effective, and responsive to growth patterns and existing and future transit demand.

- Policy 2.E.4. The City shall encourage the creation of rail transit to link Wheatland and Marysville/Yuba City and the Sacramento Area.
- Goal 2.F To provide a safe, comprehensive, and integrated system of facilities for non-motorized transportation for both transportation and recreation.
- Policy 2.F.1 The City shall promote the development of a comprehensive and safe system of recreational and commuter bicycle routes that provide connections between the City's major employment and housing areas, between its existing and planned bikeways, and between schools, parks, retail shopping, and residential neighborhoods.
- Policy 2.F.2 The City shall require developers to finance and install pedestrian pathways, bikeways, and multi-purpose paths in new development, as appropriate.
- Policy 2.F.3 The City shall encourage the development of adequate, convenient, and secure bicycle parking at employment centers, schools, recreational facilities, transit terminals, commercial businesses, the Downtown, and in other locations where people congregate.
- Policy 2.F.4 The City shall consider the needs of bicyclists when new roadways are constructed and existing roadways are upgraded.
- Policy 2.F.5. The City shall consider the needs of bicyclists when determining street widths.
- Policy 2.F.6. The City shall develop safe and pleasant pedestrian ways. To this end, the City shall ensure sidewalks are wide enough for pedestrian convenience.
- Policy 2.F.7. The City shall cooperate with the schools in maintaining and updating the Safe Routes to School program.
- Policy 2.F.8. The City shall require crosswalks and other pedestrian safety measures be designed and installed according to City of Wheatland Ordinances.
- Policy 2.F.9. The City shall encourage major employment centers (50 or more total employees) to install showers, lockers, and secure parking areas for bicyclists as part of any entitlement.

- Policy 2.F.10. The City shall ensure that bikeways are maintained in a manner that promotes their local and regional use.
- Goal 8.E To protect and improve air quality in the Wheatland area with the goal of attaining state and federal health-based air quality standards.
- Policy 8.E.1. The City shall cooperate with other agencies to develop a consistent and effective approach to regional air quality planning and management.
- Policy 8.E.2. The City shall support the Feather River Air Quality Management District in its development of improved ambient air quality monitoring capabilities and the establishment of standards, thresholds, and rules to more adequately address the air quality impacts of new development.
- Policy 8.E.3. The City shall require major new development projects to submit an air quality analysis for review and approval. Based on this analysis, the City shall require appropriate mitigation measures.
- Policy 8.E.4. In cooperation with the Feather River Air Quality Management District, the City shall develop emission thresholds to serve as the basis for requiring air quality analysis and mitigation.
- Policy 8.E.5. The City shall solicit and consider comments from local and regional agencies on proposed projects that may affect regional air quality. The City shall submit development proposals to the Feather River Air Quality Management District for review and comment in compliance with the California Environmental Quality Act (CEQA) prior to consideration by the City.
- Policy 8.E.6. In reviewing project applications, the City shall require consideration of alternatives or amendments that reduce emissions of air pollutants.
- Policy 8.E.7. The City shall require the use of EPA-certified woodstoves and fireplace inserts in lieu of wood burning indoor fireplaces in new development.
- Policy 8.E.8. The City shall encourage inclusion of exterior electrical outlets and natural gas hookups in new residential development to encourage the use of electric, rather than gas-powered, equipment, and to encourage the use of natural gas-fired barbecues.

Goal 8.G To encourage energy conservation in new and existing developments.

Policy 8.G.1. In addition to the energy regulations of Title 24, the City shall encourage the energy efficiency of new development. Possible energy efficiency design techniques include: provisions for solar access; building siting to maximize natural heating and cooling; and landscaping to aid passive cooling and the protection from winter winds.

Policy 8.G.2 The City shall encourage the planting of shade trees along all City streets to reduce radiation heating.

The above policies represent a comprehensive attempt to limit or reduce air quality effects of future development. However, these policies would not be able to reduce the impact to a *less-than-significant* level; therefore, this would be a *significant* impact.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the impacts; however, not to a less-than-significant level. Therefore, a *significant and unavoidable* impact would occur.

4.3-4 *Revise Policy 8.E.3 as follows:*

The City shall require major new development projects to submit an air quality analysis for review and approval. Projects whose impacts are not significant shall be required to implement Standard Mitigation Measures (SMM) for construction and operation, as defined by the Feather River AQMD. Projects whose impacts are significant shall be required to implement Best Available Mitigation Measures (BAMM) for construction and operation as defined by the Feather River AQMD or voluntary offsite mitigation. ~~Based on this analysis, the City shall require appropriate mitigation measures.~~

Endnotes

- ¹ City of Wheatland, Wheatland General Plan Update Background Report, July 2004.
- ² Donald Ballanti, Certified Consulting Meteorologist, Wheatland General Plan Air Quality Report, December 2005.
- ³ California Air Resources Board, Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles, October 2000.
- ⁴ NSVAB (Northern Sacramento Air Basin), *2003 Air Quality Attainment Plan*, 2003.
- ⁵ Jones and Stokes Associates. *Software User's Guide: URBEMIS-2002 for Windows with Enhanced Construction Module*, Version 8.7. 2005.
- ⁶ Garza, Vincente J.; Peter Granly; Daniel Sperling, Transportation Project-Level Carbon Monoxide Protocol, Institute of Transportation Studies Report UCD-ITS-RR-97-21, 1997.