AIR QUALITY IMPACT ASSESSMENT

FOR

CITY OF PINOLE GENERAL PLAN UPDATE

MAY 2010

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This report examines the air quality in the Planning Area and region, includes a summary of applicable air quality regulations, and analyzes potential air quality impacts associated with the proposed City of Pinole General Plan Update.

EXISTING SETTING

The Bay Area Air Quality Management District (BAAQMD) is the regional air quality agency for the San Francisco Bay Area Air Basin (SFBAAB), which comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the southern portion of Sonoma, and the southwestern portion of Solano County. The SFBAAB is depicted in **Figure 1**. Air quality in this area is determined by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions. These factors along with applicable regulations are discussed below.

CLIMATE, TOPOGRAPHY, AIR POLLUTION POTENTIAL

The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns. The Coast Range splits resulting in a western coast gap, Golden Gate, and an eastern coast gap, Carquinez Strait, which allow air to flow in and out of the SFBAAB and the Central Valley.

The climate is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell. During the summer, the Pacific high pressure cell is centered over the northeastern Pacific Ocean resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below to the surface because of the northwesterly flow produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold water band resulting in condensation and the presence of fog and stratus clouds along the Northern California coast.

In the winter, the Pacific high-pressure cell weakens and shifts southward resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential.

High Pressure Cell

During the summer, the large-scale meteorological condition that dominates the West Coast is a semi-permanent high pressure cell centered over the northeastern Pacific Ocean. This high pressure cell keeps storms from affecting the California coast. Hence, the SFBAAB experiences little precipitation in the summer months. Winds tend to blow on shore out of the north/northwest. The steady northwesterly flow induces upwelling of cold water from below. This upwelling produces a band of cold water off the California coast. When air approaches the California coast, already cool and moisture-laden from its long journey over the Pacific, it is further cooled as it crosses this bank of cold water. This cooling often produces condensation resulting in a high incidence of fog and stratus clouds along the Northern California coast in the summer.

FIGURE 1
SAN FRANCISCO BAY AREA AIR BASIN

Source: BAAQMD 2010(a)

Generally in the winter, the Pacific high weakens and shifts southward, winds tend to flow offshore, upwelling ceases and storms occur. During the winter rainy periods, inversions (layers of warmer air over colder air; see below) are weak or nonexistent, winds are usually moderate and air pollution potential is low. The Pacific high does periodically become dominant, bringing strong inversions, light winds and high pollution potential.

Topography

The topography of the SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys and bays. This complex terrain, especially the higher elevations, distorts the normal wind flow patterns in the SFBAAB. The greatest distortion occur when low level inversions are present and the air beneath the inversion flows independently of air above the inversion, a condition that is common in the summer time (BAAQMD 2010(a)).

The only major break in California's Coast Range occurs in the SFBAAB. Here the Coast Range splits into western and eastern ranges. Between the two ranges lies San Francisco Bay. The gap in the western coast range is known as the Golden Gate, and the gap in the eastern coast range is the Carquinez Strait. These gaps allow air to pass into and out of the SFBAAB and the Central Valley (BAAQMD 2010(a)).

Wind Patterns

During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate. This channeling of wind through the Golden Gate produces a jet that sweeps eastward and splits off to the northwest toward Richmond and to the southwest toward San Jose when it meets the East Bay hills (BAAQMD 2010(a)).

Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate or the San Bruno gap. For example, the average wind speed at San Francisco International Airport in July is about 17 knots (from 3 p.m. to 4 p.m.), compared with only 7 knots at San Jose and less than 6 knots at the Farallon Islands. The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon. As the day progresses, the sea breeze layer deepens and increases in velocity while spreading inland. The depth of the sea breeze depends in large part upon the height and strength of the inversion. If the inversion is low and strong, and hence stable, the flow of the sea breeze will be inhibited and stagnant conditions are likely to result (BAAQMD 2010(a)).

In the winter, the SFBAAB frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter stagnation episodes are characterized by nighttime drainage flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the SFBAAB (BAAQMD 2010(a)).

Temperature

Summertime temperatures in the SFBAAB are determined in large part by the effect of differential heating between land and water surfaces. Because land tends to heat up and cool off more quickly than water, a large-scale gradient (differential) in temperature is often created between the coast and the Central Valley, and small-scale local gradients are often produced

along the shorelines of the ocean and bays. The temperature gradient near the ocean is also exaggerated, especially in summer, because of the upwelling of cold ocean bottom water along the coast. On summer afternoons the temperatures at the coast can be 35ºF cooler than temperatures 15 to 20 miles inland. At night this contrast usually decreases to less than 10º (BAAQMD 2010(a)).

In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large (BAAQMD 2010(a)).

Precipitation

The SFBAAB is characterized by moderately wet winters and dry summers. Winter rains account for about 75 percent of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the SFBAAB to another even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys (BAAQMD 2010(a)).

During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing are usually high, and thus pollution levels tend to be low. However, frequent dry periods do occur during the winter where mixing and ventilation are low and pollutant levels build up (BAAQMD 2010(a)).

Air Pollution Potential

The potential for high pollutant concentrations developing at a given location depends upon the quantity of pollutants emitted into the atmosphere in the surrounding area or upwind, and the ability of the atmosphere to disperse the contaminated air. The topographic and climatological factors discussed above influence the atmospheric pollution potential of an area. Atmospheric pollution potential, as the term is used here, is independent of the location of emission sources and is instead a function of factors described below.

Wind Circulation

Low wind speed contributes to the buildup of air pollution because it allows more pollutants to be emitted into the air mass per unit of time. Light winds occur most frequently during periods of low sun (fall and winter, and early morning) and at night. These are also periods when air pollutant emissions from some sources are at their peak, namely, commute traffic (early morning) and wood burning appliances (nighttime). The problem can be compounded in valleys, when weak flows carry the pollutants upvalley during the day, and cold air drainage flows move the air mass downvalley at night. Such restricted movement of trapped air provides little opportunity for ventilation and leads to buildup of pollutants to potentially unhealthful levels (BAAQMD 2010(a)).

Solar Radiation

The frequency of hot, sunny days during the summer months in the SFBAAB is another important factor that affects air pollution potential. It is at the higher temperatures that ozone is formed. In the presence of ultraviolet sunlight and warm temperatures, reactive organic gases and oxides of nitrogen react to form secondary photochemical pollutants, including ozone. Because temperatures in many of the SFBAAB inland valleys are so much higher than near the coast, the inland areas are especially prone to photochemical air pollution. In late fall and winter, solar

angles are low, resulting in insufficient ultraviolet light and warming of the atmosphere to drive the photochemical reactions. Ozone concentrations do not reach significant levels in the SFBAAB during these seasons (BAAQMD 2010(a)).

Inversions

An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth, i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground. The highest air pollutant concentrations in the SFBAAB generally occur during inversions (BAAQMD 2010(a)).

There are two types of inversions that occur regularly in the SFBAAB. One is more common in the summer and fall, while the other is most common during the winter. The frequent occurrence of elevated temperature inversions in summer and fall months acts to cap the mixing depth, limiting the depth of air available for dilution. Elevated inversions are caused by subsiding air from the subtropical high pressure zone, and from the cool marine air layer that is drawn into the SFBAAB by the heated low pressure region in the Central Valley (BAAQMD 2010(a)).

The inversions typical of winter, called radiation inversions, are formed as heat quickly radiates from the earth's surface after sunset, causing the air in contact with it to rapidly cool. Radiation inversions are strongest on clear, low-wind, cold winter nights, allowing the build-up of such pollutants as carbon monoxide and particulate matter. When wind speeds are low, there is little mechanical turbulence to mix the air, resulting in a layer of warm air over a layer of cooler air next to the ground. Mixing depths under these conditions can be as shallow as 50 to 100 meters, particularly in rural areas. Urban areas usually have deeper minimum mixing layers because of heat island effects and increased surface roughness. During radiation inversions downwind transport is slow, the mixing depths are shallow, and turbulence is minimal (BAAQMD 2010(a)).

Although each type of inversion is most common during a specific season, either inversion mechanism can occur at any time of the year. Sometimes both occur simultaneously. Moreover, the characteristics of an inversion often change throughout the course of a day. The terrain of the SFBAAB also induces significant variations among subregions (BAAQMD 2010(a)).

Climatological Subregions

Although air pollution potential is strongly influenced by climate and topography, the air pollution that occurs in a location also depends upon the amount of air pollutant emissions in the surrounding area or transported from more distant places. Air pollutant emissions generally are highest in areas that have high population densities, high motor vehicle use and/or industrialization. These contaminants created by photochemical processes in the atmosphere, such as ozone, may result in high concentrations many miles downwind from the sources of their precursor pollutants (BAAQMD 2010(a)).

Varying climatological and topographic conditions, the location of emission sources, and susceptibility to emissions transport can combine to result in substantial variations in air pollution potential, within inhabited subregions of the SFBAAB (BAAQMD 2010(a)).

Northern Alameda and Western Contra Costa Counties Subregion

Within the SFBAAB there are eleven major climatological subregions (BAAQMD 2010(a)). The City of Pinole is located within the Northern Alameda and Western Contra Costa Counties

Subregion. This climatological subregion stretches from Richmond to San Leandro. Its western boundary is defined by the Bay and its eastern boundary by the Oakland-Berkeley Hills. The Oakland-Berkeley Hills have a ridge line height of approximately 1500 feet, a significant barrier to air flow. The most densely populated area of the subregion lies in a strip of land between the Bay and the lower hills. In this area, marine air traveling through the Golden Gate, as well as across San Francisco and through the San Bruno Gap, is a dominant weather factor. The Oakland-Berkeley Hills cause the westerly flow of air to split off to the north and south of Oakland, which causes diminished wind speeds. The prevailing winds for most of this subregion are from the west. At the northern end, near Richmond, prevailing winds are from the south-southwest (BAAQMD 2010(a)).

Temperatures in this subregion have a narrow range due to the proximity of the moderating marine air. Maximum temperatures during summer average in the mid-70's, with minimums in the mid-50's. Winter highs are in the mid- to high-50's, with lows in the low- to mid-40's. The air pollution potential is lowest for the parts of the subregion that are closest to the bay, due largely to good ventilation and less influx of pollutants from upwind sources. The occurrence of light winds in the evenings and early mornings occasionally causes elevated pollutant levels. This subregion contains a variety of industrial air pollution sources. Some industries are quite close to residential areas. The subregion is also traversed by frequently congested major freeways. Traffic and congestion, and the motor vehicle emissions they generate, are increasing (BAAQMD 2010(a)).

AMBIENT AIR QUALITY STANDARDS

Both the U.S. Environmental Protection Agency (EPA) and California Air Resources Board (ARB) established ambient air quality standards for common air pollutants. These ambient air quality standards are levels of contaminants that 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 state ambient standards were developed independently with differing purposes and methods, although both processes attempted to avoid health-related effects. As a result, federal and state standards differ in some cases. In general, California standards are more stringent. This is particularly true for nitrogen dioxide (NO_2) and course particulate matter (PM_{10}). The federal and California state ambient air quality standards and BAAQMD attainment status are summarized in **Table 1**.

TABLE 1
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS

Pollutant	Averaging Time	State Standard	Attainment Status	Federal Primary Standard	Attainment Status
Ozone (O_3)	1-Hour 8-Hour	0.09 ppm 0.07 ppm	N (Serious) --	-- 0.075 ppm	-- N
Carbon Monoxide (CO)	1-Hour 8-Hour	20 ppm 9.0 ppm	A	35 ppm 9.0 ppm	U/A
Nitrogen Dioxide (NO_2)	Annual Average 1-Hour	0.03 ppm 0.18 ppm	-- A	0.053 ppm --	U/A --
Sulfur Dioxide (SO_2)	Annual Average 24-Hour 3-Hour 1-Hour	-- 0.04 ppm 0.25 ppm	-- A A	0.03 ppm 0.14 ppm -- --	A A A --
Respirable Particulate Matter (PM_{10})	Annual Average 24-Hour	20 $\mu g/m^3$ 50 $\mu g/m^3$	N	-- 150 $\mu g/m^3$	U
Fine Particulate Matter ($PM_{2.5}$)	Annual Average 24-Hour	12 $\mu g/m^3$ --	N --	15 $\mu g/m^3$ 35 $\mu g/m^3$	N
Lead	30-day Average Calendar Quarter	1.5 $\mu g/m^3$ --	A --	-- 1.5 $\mu g/m^3$	-- --
Sulfates	24-Hour	25 $\mu g/m^3$	A	No National Standards	
Hydrogen Sulfide	1-hour	0.03 ppm	U		
Vinyl Chloride	24-hour	0.01 ppm	--		
Visibility Reducing Particulate Matter	8-hour	Extinction coefficient of 0.23 per kilometer-visibility of 10 miles or more	U		

Notes: ppm = parts per million, $\mu g/m^3$ = micrograms per cubic meter.
Source: BAAQMD 2010(a), 2010(b)

AMBIENT AIR QUALITY

The BAAQMD operates a regional air quality monitoring network that regularly measures the concentrations of the five major criteria air pollutants. Air quality conditions in the SFBAAB have improved significantly since the BAAQMD was created in 1955. Ambient concentrations and the number of days on which the region exceeds standards have declined dramatically. Neither State nor national ambient air quality standards of these chemicals have been violated in recent decades for nitrogen dioxide, sulfur dioxide, sulfates, lead, hydrogen sulfide, and vinyl chloride.

The nearest ambient air quality monitoring station is the San Pablo-Rumrill Boulevard monitoring station, located approximately four miles southwest of the City of Pinole. **Table 2** summarizes historical occurrences of pollutant levels for this monitoring station, based on the last three-years of available data (i.e., 2007-2009). The number of days for which state and federal ambient air quality standards have been exceeded during this same monitoring period is also presented. As depicted, there have been no days during which measured concentrations of ozone, carbon monoxide, or nitrogen dioxide exceeded federal or state ambient air quality standards during the last three years of available data. The state standard for PM_{10} was exceeded on two days in 2007.

TABLE 2
AMBIENT AIR QUALITY MONITORING DATA

Pollutant Standards	2007	2008	2009
Ozone			
Max 1-hour concentration (ppm)	0.074	0.084	0.043
Max 8-hour concentration (ppm) (federal/state)	0.051/0.051	0.063/0.064	0.040/0.040
Number of days above State 1-hr standard	0	0	0
Number of days above State/Federal 8-hour standard	0/0	0/0	0/0
Respirable Particulate Matter (PM_{10})			
Max 24-hour concentration (μg/m3) (federal/state)	54.4/57.4	41.8/44.3	32.0/34.0
Number of days above State/Federal standard	2/0	0/0	0/0
Carbon Monoxide (CO)			
Max 1-hr/8-hr concentration (ppm)	2.4/1.23	2.5/1.30	–/0.78
Number of days above State/Federal 8-hour standards	0	0	0
Number of days above State/Federal 1-hour standard	0	0	0
Nitrogen Dioxide (NO_2)			
Max 1-Hour concentration (ppm)	0.052	0.067	0.041
Annual Concentration (ppm)	0.012	0.012	–
Number of days above State standard	0	0	0

Based on ambient monitoring data obtained from the San Pablo-Rumrill Boulevard monitoring station.
– Insufficient or no data currently available to determine the value.
Source: ARB 2010(a), EPA 2010

AIR POLLUTANTS OF CONCERN AND HEALTH EFFECTS

The most problematic pollutants in the planning area include 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

Ground-level ozone (O3), commonly referred to as smog, is greatest on warm, windless, sunny days. Ozone is not emitted directly into the environment, but is formed in the atmosphere by complex chemical reactions between ROG and NOX in the presence of sunlight. Ozone formation is greatest on warm, windless, sunny days. The main sources of NOX and ROG, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) the evaporation of solvents, paints, and fuels, and biogenic sources. Automobiles are the single largest source of ozone precursors in the SFBAAB. Tailpipe emissions of ROG are highest during cold starts, hard acceleration, stop-and-go conditions, and slow speeds. They decline as speeds increase up to about 50 mph, then increase again at high speeds and high engine loads. ROG emissions associated with evaporation of unburned fuel depend on vehicle and ambient temperature cycles. Nitrogen oxide emissions exhibit a different curve; emissions decrease as the vehicle approaches 30 mph and then begin to increase with increasing speeds (BAAQMD 2010(a)).

Ozone levels usually build up during the day and peak in the afternoon hours. Short-term exposure can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, it can aggravate existing respiratory diseases such as asthma, bronchitis and emphysema. Chronic exposure to high ozone levels can permanently damage lung tissue. Ozone can also damage plants and trees, and materials such as rubber and fabrics (BAAQMD 2010(a)).

Particulate Matter

Particulate matter (PM) can be divided into several size fractions. Coarse particles (PM_{10}) are between 2.5 and 10 microns in diameter and arise primarily from natural processes, such as wind-blown dust or soil. Fine particles ($PM_{2.5}$) are less than 2.5 microns in diameter and are produced mostly from combustion or burning activities. Fuel burned in cars and trucks, power plants, factories, fireplaces, and wood stoves produces fine particles.

The level of $PM_{2.5}$ 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 deep in the lungs. The health effects vary depending on a variety of factors, including the type and size of particles. Research has demonstrated a correlation between high PM concentrations and increased mortality rates. Elevated PM concentrations can also aggravate chronic respiratory illnesses such as bronchitis and asthma (BAAQMD 2010(a)).

Carbon Monoxide

Carbon monoxide (CO) is an odorless, colorless gas that is formed by the incomplete combustion of fuels. At high concentrations, CO reduces the oxygen-carrying capacity of the blood and can cause dizziness, headaches, unconsciousness, and even death. CO can also aggravate cardiovascular disease. Relatively low concentrations of CO can significantly affect the amount of oxygen in the bloodstream because CO binds to hemoglobin more strongly than oxygen.

Elevated CO concentrations are usually localized and are often the result of a combination of high traffic volumes and traffic congestion. Elevated CO levels develop primarily during winter periods of light winds or calm conditions combined with the formation of ground-level temperature inversions. Wintertime CO concentrations are higher because of reduced dispersion of vehicle emissions and because CO emission rates from motor vehicles increase as

temperature decreases. However, CO emissions and ambient concentrations have decreased significantly in recent years. These improvements are due largely to the introduction of cleaner burning motor vehicles and motor vehicle fuels. CO is still a pollutant that must be closely monitored, however, due to its severe effect on human health.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Construction devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NO_X. Because NO_2 is formed and depleted by reactions associated with O_3, the NO_2 concentration in a particular geographic area may not be representative of the local NO_X emission sources.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of adverse health effects depends primarily on the concentration inhaled rather than the duration of the exposure. Exposure can result in a variety of acute symptoms, including coughing, difficulty with breathing, vomiting, headache, and eye irritation. Symptoms that are more significant may include chemical pneumonitis or pulmonary edema with breathing abnormalities, cyanosis, chest pain and rapid heartbeat.

Sulfur Dioxide

Sulfur dioxide (SO_2) is produced by such stationary sources as coal and oil combustion, steel mills, refineries, pulp and paper mills. The major adverse health effects associated with exposure to SO_2 pertain the upper respiratory tract. SO_2 is a respiratory irritant with constriction of the bronchioles occurring with inhalation of SO_2 at five ppm or more. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Similar to NO_2, the severity of adverse health effects depends primarily on the concentration inhaled rather than the duration of the exposure. Exposure to high concentrations of SO_2 may result in edema of the lungs or glottis and respiratory paralysis.

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are considered either carcinogenic or non-carcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs are assumed to have no safe threshold below which health impacts would not occur and cancer risk is expressed as excess cancer cases per one million exposed individuals. Non-carcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

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 from accidental releases of hazardous materials during upset conditions. The health effects of TACs include cancer, birth defects, neurological damage, and death. **Table 3** displays potential sources of TAC emissions for various land uses. No major sources of TAC emissions were identified in the City of Pinole or surrounding areas (ARB 2010(b)). However, various smaller permitted sources of TACs

are located within the City, including gasoline dispensing facilities, and dry cleaning establishments.

TABLE 3
TOXIC AIR EMISSION BY LAND USE

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

Source: EDCAPCD 2002

Diesel Exhaust

Diesel exhaust is a TAC of growing concern in California. According to the California Almanac of Emissions and Air Quality (ARB 2009b), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being PM from diesel fueled engines (DPM). In 1998, ARB identified DPM as a TAC. DPM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. 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. DPM 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. BAAQMD research indicates that mobile-source emissions of DPM represent a substantial portion of the ambient background risk from TACs in the SFBAAB (BAAQMD 2010(a)).

Unlike criteria pollutants, TACs do not have ambient air quality standards. Since no safe levels of TACs can be determined, there are no air quality standards for TACs. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. Two types of risk are usually assessed: chronic non-cancer risk and acute non-cancer risk. Both the State and BAAQMD implement programs of identifying and reducing DPM health risks. These programs include implementation and enforcement 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:

- Railroad operations
- Warehouses
- Schools with a high volume of bus traffic
- High volume highways (Interstate 80 and State Route 65)
- High volume arterials and local roadways with a high level of diesel traffic.

Land Use Compatibility with TAC Emission Sources

The ARB published an informational guide entitled: "Air Quality and Land Use Handbook: A Community Health Perspective" (Handbook) in 2005. The purpose of this guide is to provide information to aid local jurisdictions in addressing issues and concerns related to the placement of sensitive land uses near major sources of air pollution. The ARB's Handbook includes recommended separation distances for various land uses that are based on relatively conservative estimations of emissions based on source-specific information. However, these recommendations are not site specific and should not be interpreted as defined "buffer zones". It is also important to note that the recommendations of the Handbook are advisory and need to be balanced with other State and local policies (ARB 2005). Depending on site and project-specific conditions, an assessment of potential increases in exposure to TACs may be warranted for proposed development projects located within the distances identified. ARB-recommended separation distances for various sources of emissions are summarized in **Table 4**.

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 CO concentrations, reduces visibility, and contains numerous TACs. Present controls on this source include the adoption of emission standards for wood stoves and fireplace inserts. In 2008, the BAAQMD adopted Regulation 6, Rule 3 (Wood-Burning Devices) to reduce harmful emissions associated with wood smoke (BAAQMD 2010(a)).

TABLE 4
RECOMMENDATIONS ON SITING NEW SENSITIVE LAND USES NEAR AIR POLLUTANT SOURCES

Source Category	Advisory Recommendations
Freeways and High-Traffic Roads	Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day.
Distribution Centers	Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week).
	Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.
Rail Yards	Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard.
	Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or ARB on the status of pending analyses of health

Source Category	Advisory Recommendations
	risks.
Refineries	Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloroethylene	Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district.
	Do not site new sensitive land uses in the same building with perchloroethylene dry cleaning operations.
Gasoline Dispensing Facilities	Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.

Note: Recommendations are advisory, are not site-specific, and may not fully account for future reductions in emissions, including those resulting from compliance with existing/future regulatory requirements, such as reductions in diesel-exhaust emissions anticipated to occur with continued implementation of ARB's Diesel Risk Reduction Plan.

Source: ARB 2005

Asbestos

Asbestos is the common name for a group of naturally-occurring fibrous silicate minerals that can separate into thin but strong and durable fibers. Naturally-occurring asbestos (NOA), which was identified as a TAC in 1986 by ARB, is located in many parts of California and is commonly associated with ultramafic rock. The City of Pinole is not located near any areas that are likely to contain ultramafic rock.

Odors

Typically odors are regarded as an annoyance rather than 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).

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.

SENSITIVE RECEPTORS AND POLLUTION SOURCES

Sensitive receptors are facilities where sensitive receptor population groups (children, the elderly, the acutely ill, and the chronically ill) are likely to be located. These land uses include schools, retirement homes, convalescent homes, hospitals, and medical clinics.

REGULATORY FRAMEWORK

Air quality in the SFBAAB is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy making, education, and a variety of programs. The agencies primarily responsible for improving the air quality in the SFBAAB, including the City of Pinole, are discussed below along with their individual responsibilities.

FEDERAL

U.S. Environmental Protection Agency

EPA is responsible for enforcing the Federal Clean Air Act and the 1990 amendments to it (CAAA), and the national ambient air quality standards (federal standards) that 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 O_3, CO, NO_2, SO_2, PM_{10}, and lead. 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.

As part of its enforcement responsibilities, EPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs.

Hazardous Air Pollutant Program

Title III of the FCAAA requires the EPA to promulgate national emissions standards for hazardous air pollutants (NESHAPs). The NESHAP may differ for major sources than for area sources of 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), the EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring MACT. These federal rules are also commonly referred to as MACT standards, because they reflect the Maximum Achievable Control Technology. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), the 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 FCAAA required the 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, §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 (BAAQMD 2010(a)).

STATE

California Air Resources Board

ARB, a department of the California Environmental Protection Agency, 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 CAAA 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.

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. 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 PM_{10} and NO_2, far more stringent.

Toxic Air Contaminant Programs

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 over 21 TACs, and adopted the EPA's list of HAPs as TACs. Most recently, diesel exhaust particulate was added to the ARB list of TACs. Once a TAC is identified, ARB's then adopts an Airborne Toxics Control Measure 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 TBACT to minimize emissions. None of the TACs identified by ARB have a safe threshold.

The Hot Spots Act requires that existing facilities that emit toxic substances above specified level:

- Prepare a toxic emission inventory;
- Prepare a risk assessment if emissions are significant;
- Notify the public of significant risk levels;
- Prepare and implement risk reduction measure.

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 new 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 with which transit agencies must demonstrate compliance with the urban transit bus fleet rule. Upcoming 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. Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially less TACs than under current conditions.

Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) have been reduced significantly over the last decade, and will be reduced further in California through a progression of regulatory measures [e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of ARB's Risk Reduction Plan, it is expected that diesel PM concentrations will be reduced by 75% in 2010 and 85% in 2020 from the estimated year 2000 level. Adopted regulations are also expected to continue to reduce formaldehyde emissions from cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced (BAAQMD 2010(a)).

Senate Bill 656

In 2003, the California Legislature enacted Senate Bill 656 to reduce public exposure to PM_{10} and $PM_{2.5}$. ARB approved a list of the most readily available, feasible, and cost-effective control measures that can be employed by air districts to reduce PM_{10} and $PM_{2.5}$ (collectively referred to as PM) in 2004. The list is based on rules, regulations, and programs existing in California as of January 1, 2004, for stationary, area-wide, and mobile sources. In 2005, air districts adopted implementation schedules for selected measures from the list. The implementation schedules identify the appropriate subset of measures, and the dates for final adoption, implementation, and the sequencing of selected control measures. In developing the implementation schedules, each air district prioritized measures based on the nature and severity of the PM problem in their area and cost-effectiveness. Consideration was also given to ongoing programs such as measures being adopted to meet national air quality standards or the state ozone planning process.

LOCAL

Bay Area Air Quality Management District

The BAAQMD attains and maintains air quality conditions in the SFBAAB through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of the BAAQMD includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. The BAAQMD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the FCAA, FCAAA, and the CCAA. The BAAQMD also limits emissions and public exposure to emissions, including TACs, through a number of programs. The BAAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. In addition, the BAAQMD has adopted Regulation 11 Rules 2 and 14, which address asbestos demolition renovation, manufacturing, and standards for asbestos containing serpentine (BAAQMD 2010(a)).

BAAQMD CEQA Guidelines

In 2009, the BAAQMD released the update to its CEQA Guidelines. This is an advisory document that provides the Lead Agency, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents. The handbook contains the following applicable components (BAAQMD 2010(a)):

- Criteria and thresholds for determining whether a project may have a significant adverse air quality impact;
- Specific procedures and modeling protocols for quantifying and analyzing air quality impacts;
- Methods available to mitigate air quality impacts;
- Information for use in air quality assessments and environmental documents that will be updated more frequently such as air quality data, regulatory setting, climate, topography.

2010 Clean Air Plan

As stated above, the BAAQMD prepares plans to attain ambient air quality standards in the SFBAAB. The BAAQMD prepares ozone attainment plans (OAP) for the national ozone standard and clean air plans (CAP) for the California standard both in coordination with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG). With respect to applicable air quality plans, the BAAQMD prepared the *2010 Clean Air Plan* to address nonattainment of the national 1-hour ozone standard in the SFBAAB; as well as, nonattainment of the CAAQS. The purpose of the 2010 Clean Air Plan is to (BAAQMD 2010(a)):

- Update the Bay Area 2005 Ozone Strategy in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone;
- Consider the impacts of ozone control measures on particulate matter (PM), air toxics, and greenhouse gases in a single, integrated plan;
- Review progress in improving air quality in recent years;
- Establish emission control measures to be adopted or implemented in the 2009-2012 timeframe.

IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

Per Appendix G of the California Environmental Quality Act (CEQA) Guidelines and BCAQMD recommendations, air quality impacts are considered significant if implementation of the proposed project would:

1) Conflicts with or obstruct implementation of the applicable air quality plan.
2) Violates any air quality standard or contributes substantially to an existing or projected air quality violation.
3) Results in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
4) Exposes sensitive receptors to substantial pollutant concentrations.
5) Creates objectionable odors affecting a substantial number of people.

As stated in Appendix G, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. To assist local jurisdictions in the evaluation of air quality impacts, the BAAQMD

has development *CEQA Guidelines*, which was most recently updated in May 2010. The *CEQA Guidelines* include recommended significance thresholds to be applied for project-level and plan-level environmental documentation. In accordance with the BAAQMD's *CEQA Guidelines* (2010), the following plan-level significance thresholds were relied upon for determination of impact significance associated with the proposed general plan update (BAAQMD 2010(a)):

- **Criteria Air Pollutants and Precursors**

  To meet the Threshold of Significance for operational-related criteria air pollutant and precursor impacts, a proposed plan must satisfy the following criteria:
  1. Consistency with current air quality plan (AQP) control measures.
  2. A proposed plan's projected VMT or vehicle trips (VT) increase is less than or equal to its projected population increase.

- **Local Community Risk and Hazards**

  The BAAQMD-recommended thresholds of significance for plans with regard to community risk and hazard impacts are:
  1. The land use diagram must identify: a) Special overlay zones around existing and planned sources of TACs; and b) Special overlay zones of at least 500 feet (or Air District-approved modeled distance) on each side of all freeways and high-volume roadways; and
  2. The plan must also identify goals, policies, and objectives to minimize potential impacts and create overlay zones for sources of TACs and receptors.

- **Odors**

  For plans to have a less-than-significant impact, a plan must identify the location of existing and planned odor sources in the plan area. The plan must also include policies to reduce potential odor impacts in the plan area.

METHODOLOGY

Air quality impacts were assessed in accordance with methodologies recommended by the BAAQMD and in comparison to the recommended BAAQMD significance thresholds. Estimates of projected population and vehicle miles traveled for future conditions were obtained from the California Department of Finance and the Association of Bay Area Governments, respectively. For comparison purposes, long-term increase in emissions were quantified for both baseline future cumulative (year 2030) and future cumulative plus project conditions using the URBEMIS 2007 (v9.2.4) computer program. This program estimates 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 the General Plan Update, where specific land uses have not yet been identified, may not fully account for site-specific conditions, but has been used to provide a reasonable estimation of emissions based on typical land use development conditions under the proposed General Plan Update.

IMPACTS AND MITIGATION MEASURES

Conflict with the BAAQMD 2010 Clean Air Plan

Impact 1 Subsequent land use activities associated with implementation of the proposed General Plan Update would result in increased population and VMT that would conflict with the BAAQMD's Clean Air Plan. The proposed General

Plan Update includes several policy provisions that would assist in air quality attainment efforts, however, this impact is considered to be **significant and unavoidable**.

In accordance with BAAQMD recommended guidance, determination of consistency is based on an evaluation of projected increases in population and VMT attributable to the proposed plan, as well as, consistency with the control measures identified in the CAP. The proposed GPU's consistency with projected future population and VMT projections and CAP control measures are discussed in more detail, as follows:

Consistency with Ozone Strategy Population Projections

According to the California Department of Finance, the City of Pinole's existing (year 2009) population is 19,383 individuals. Because the City is largely built out, minimal growth is projected for future years. However, the proposed General Plan Update policy document and land use map would accommodate some modification of uses and infill development that could increase population, housing, and employment in the City in order to provide adequate housing opportunities for all segments of the community and to increase the jobs-to-housing ratio. Primarily the General Plan Update includes opportunities for some new development and redevelopment on Pinole's primary commercial corridors via the Three Corridor Specific Plan. Accordingly, population projections for the General Plan Update focus on the land use changes that increase development potential within the Specific Plan areas. Under existing baseline conditions, the City's projected population for year 2030 conditions is estimated at 21,800 individuals, an increase of approximately 2,417 individuals, or an overall increase of approximately 12.5 percent in comparison to existing conditions. With implementation of the proposed General Plan Update, the City's projected year 2030 population would increase to approximately 22,353 individuals, which would equate to an overall increase of approximately 2,970 individuals, or an increase of approximately 15 percent in comparison to existing conditions. Given that buildout of the proposed General Plan update would result in projected population increases that would exceed ABAG projections, the rate of population growth would not be consistent with projections used for air quality attainment plans. For this reason, increased emissions attributable to future growth could potentially exceed those identified in the air quality plan.

Rate of VMT Growth in Excess of Population Growth

Based on information obtained from the traffic analysis prepared for this project, existing annual vehicle miles traveled (VMT) was estimated at approximately 620,000 miles. Under existing baseline conditions, projected future (year 2030) annual VMT would increase to approximately 750,000 miles. With implementation of the proposed General Plan Update, projected future (year 2030) annual VMT would increase to approximately 830,000 miles. In comparison to baseline future conditions, implementation of the proposed General Plan Update would result in an overall increase in annual VMT of approximately 80,000 miles, or an increase of approximately 34 percent, in comparison to existing conditions. Under future cumulative (year 2030) conditions, implementation of the proposed General Plan Update would result in a slight increase in daily vehicle trips, due to projected increases in development, as well as a slight increase in average trip distances (i.e., approximately 0.02 miles per trip). The projected growth rate in VMT attributable to the proposed General Plan Update (i.e., 34 percent) would be higher than the projected population growth identified for this same period (i.e., 15 percent).

Consistency with BAAQMD 2010 Clean Air Plan

The *2010 Clean Air Plan (CAP)* includes numerous control measures related to reducing emissions from stationary and mobile sources of emissions. **Table 5** provides a summary of proposed General Plan Update (GPU) policies that are supportive of control measures most applicable to local jurisdictions and development projects. A summary description of each CAP control measure is included along with a listing of the most relevant GPU policies that support this CAP control measures. It is important to note that **Table 5** only provides a summary of the most relevant proposed GPU policies that relate to the CAP control measures. The proposed GPU contains numerous additional proposed policies, including those related to transportation, land use, energy conservation, and resource conservation that would also help to support these control measures and help to reduce emissions.

TABLE 5
CONSISTENCY WITH BAAQMD'S 2010 CLEAN AIR PLAN

2010 Clean Air Plan Control Strategies	General Plan Policies that Provide Consistency
MSM A-1 - Promote Clean, Fuel-Efficient Light and Medium-Duty Vehicles. **Brief Summary:** The Air District, in cooperation with local businesses, city and county governments, and state and federal agencies, will expand the use of Super Ultra-low Emission (SULEV) and Partial-Zero (ZEV) emission light-duty passenger vehicles and trucks within the Bay Area.	The City of Pinole supports these efforts by implementation of various policies, including, but not limited to, Policy SE.7.5, Policy SE.7.6, and Policy SE.8.10.
MSM A-2 - Zero Emission Vehicles (ZEV) and Plug-in Hybrids **Brief Summary:** The Air District, in cooperation with local businesses, city and county governments, and state and federal agencies, will expand the use of Zero Emission (ZEV) and Plug-in Hybrid (PHEV) passenger vehicles and light-duty trucks within the Bay Area.	
TCM C-1 - Voluntary Employer-Based Trip Reduction Programs **Brief Summary:** This measure will support voluntary efforts by Bay Area employers to encourage their employees to use alternative commute modes, such as transit, ridesharing, bicycling, walking, telecommuting, etc.	The City of Pinole supports these efforts by implementation of various policies, including, but not limited to, Policy SE.7.7, Policy SE.7.8, Policy SE.7.9, Policy SE.7. Policy SE.8.1, Policy CE.6.2, Policy CE.6.3, and Policy CE.8.2.
TCM C-2 - Safe Routes to Schools and Safe Routes to Transit Programs **Brief Summary:** This measure will facilitate safe routes to schools and transit by providing funds and working with transportation agencies, local governments, schools, and communities to implement safe access for pedestrians and cyclists. Likely projects will include implementation of bicycle facilities, such as lanes, routes, paths, and parking, and improvements to pedestrian facilities, such as sidewalks/paths, benches, reduced street width, reduced intersection turning radii, crosswalks with activated signals, curb extensions/bulbs, buffers between sidewalks and traffic lanes and streets trees.	The City of Pinole supports these efforts by implementation of various policies, including, but not limited to, Policy SE.8.7, Policy CE.1.2, Policy CE.5.3, Policy CE.7.1, Policy CE.7.3, Policy CE.7.4, Policy CE.8.1, and Policy CE.8.3,

TABLE 5
CONSISTENCY WITH BAAQMD'S 2010 CLEAN AIR PLAN

2010 Clean Air Plan Control Strategies	General Plan Policies that Provide Consistency
TCM C-3 - Ridesharing Services and Incentives **Brief Summary:** This measure will promote ridesharing services and incentives through the implementation of the 511 Regional Rideshare Program, as well as local rideshare programs implemented by Congestion Management Agencies. These activities will include marketing rideshare services, operating the rideshare information call center and website, and providing vanpool support services. In addition, this measure includes provisions for encouraging car- sharing programs where appropriate.	The City of Pinole supports these efforts by implementation of various policies, including, but not limited to, Policy CE.5.1, Policy CE.6.1, Policy CE.6.2. and Policy CE.5.3
TCM D-1 - Bicycle Access and Facilities Improvements **Brief Summary:** TCM D-1 will expand bicycle facilities serving employment sites, educational and cultural facilities, residential areas, shopping districts, and other activity centers. Typical improvements include bike lanes, routes, paths, and bicycle parking facilities. This TCM also includes improving bicycle access to transit and supporting the annual Bike to Work event.	The City of Pinole supports these efforts by implementation of various policies, including, but not limited to, Policy CE.1.2, Policy CE.7.1, and Policy CE.7.2.
TCM D-2 - Pedestrian Access and Facilities Improvements **Brief Summary:** TCM D-2 will improve pedestrian facilities and encourage walking by funding projects that improve pedestrian access to transit, employment and major activity centers. Improvements may include sidewalks/paths, benches, reduced street width, reduced intersection turning radii, crosswalks with activated signals, curb extensions/bulbs, buffers between sidewalks and traffic lanes, and street trees.	The City of Pinole supports these efforts by implementation of various policies, including, but not limited to, Policy CE.1.2, Policy CE.1.3 and Policy CE.1.5.
TCM D-3 - Local Land Use Strategies **Brief Summary:** TCM D-3 will support and promote land use patterns, policies, and infrastructure investments that support higher density mixed-use, residential and employment development near transit in order to facilitate walking, bicycling and transit use.	The City of Pinole supports these efforts by implementation of various policies, including, but not limited to, Policy CE.1.1, Policy CE.1.3, Policy CE.1.4, Policy CE.1.6, Policy CE.6.2, Policy CE.7.1, Policy CE.7.3, Policy CE.8.1, Policy CE.8.3, Policy CE.8.4, Policy SE.8.2, Policy SE.8.3, Policy SE.8.4, and Policy SE.7.1.
TCM E-2 - Promote Parking Policies to Reduce Motor Vehicle Travel **Brief Summary:** Parking policies and practices have a profound impact on vehicle travel and mode choice, as well as land use patterns and the quality of the built environment. Parking policies are also an important tool in implementing focused growth strategies. This control measure outlines how the Air District, in cooperation with its regional agency partners, will 1) take actions at the regional level to implement parking policies that will benefit air quality, and 2) encourage and support local agency parking policies to reduce motor vehicle travel and promote focused growth.	The City of Pinole supports these efforts by implementation of various policies, including, but not limited to, Policy SE.8.6, Policy SE.8.7, Policy CE.5.4, Policy CE.6.1. and Policy CE.5.3
ECM 1 - Energy Efficiency **Brief Summary:** This control measure consists of three components: 1) provide education and outreach to	The City of Pinole supports these efforts by implementation of various policies, including, but not limited to, Policy SE.1.2, Policy SE.1.3, Policy SE.1.2, Policy SE.1.4, Policy

TABLE 5
CONSISTENCY WITH BAAQMD'S 2010 CLEAN AIR PLAN

2010 Clean Air Plan Control Strategies	General Plan Policies that Provide Consistency
increase energy efficiency in residential and commercial buildings and industrial facilities, 2) provide technical assistance to local governments to adopt and enforce energy efficiency building codes, and 3) provide incentives for increasing energy efficiency at schools.	SE.2.1, Policy SE.2.2, Policy SE.34.1, Policy SE.4.2, Policy SE.4.3, Policy SE.4.4, Policy SE.4.5, Policy SE.4.6, Policy SE.4.7, Policy SE.6.1, Policy SE.6.2, Policy SE.6.7 and Policy LU.4.2.
ECM 2 - Renewable Energy **Brief Summary:** This control measure consists of two components: 1) promote incorporation of renewable energy sources into new developments and redevelopment projects, and 2) foster innovative renewable energy projects through provision of incentives. Note: In addition, as part of the Further Study Measure entitled "Enhancement to Energy Measures," the District will evaluate the cost-effectiveness of solar thermal technology for consideration as a potential solar hot water heating rule.	The City of Pinole supports these efforts by implementation of various policies, including, but not limited to, Policy SE.6.6, Policy SE.34.1, Policy SE.4.2, Policy SE.4.3, Policy SE.4.4, Policy SE.4.5, Policy SE.4.6, and Policy SE.4.7.
ECM 3 - Urban Heat Island Mitigation **Brief Summary:** The control measure includes regulatory and educational approaches to reduce the "urban heat island" (UHI) phenomenon by increasing the application of "cool roofing" and "cool paving" technologies.	The City of Pinole supports these efforts by implementation of various policies, including, but not limited to, Policy SE.7.1, Policy SE.7.2 and Policy SE.7.3.
ECM 4 - Shade Tree Planting **Brief Summary:** The control measure includes voluntary approaches to reduce the "urban heat island" phenomenon by increasing shading in urban and suburban communities through planting of (low VOC-emitting) trees and preservation of natural vegetation and ground cover.	The City of Pinole supports these efforts by implementation of various policies, including, but not limited to, Policy SE.4.5, and Policy SE.3.3.
FSM 13 - Energy Efficiency and Renewable Energy **Brief Summary:** Many agencies are already involved in issuing building standards and promoting energy efficiency and renewable energy. It is important to determine the proper role and added value that the District could bring to energy use in the buildings sector in light of constraints related to legal authority, potential enforcement mechanisms, in-house experience and expertise, available resources, and existing regulatory structures.	The City of Pinole supports these efforts by implementation of various policies, including, but not limited to, Policy SE.1.2, Policy SE.1.3, Policy SE.1.4, Policy SE.34.1, and Policy SE.4.2.

The proposed GPU would be consistent with the control measures identified in the 2010 CAP. However, as noted earlier in this impact discussion, the proposed GPU would result in increased population and VMT that would exceed AMBAG projections, at buildout. For this reason, the proposed GPU would be inconsistent with the BAAQMD's *Clean Air Plan*. This impact would be considered **significant**.

Proposed General Plan Update Policies and Actions that Provide Mitigation

The proposed General Plan Update contains numerous policies and actions that include specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact. A majority of the policies related to air quality are contained

in the Sustainability Element and the Transportation and Circulation Element. Additional air quality-related policies are also included in various other proposed General Plan Elements. The following policies and actions are most applicable to this impact:

Sustainability Element

POLICY SE.1.2 Conduct public outreach to Pinole businesses to inform them about rebates and other financial incentives for using ENERGY STAR® or equivalent energy-efficient appliances, lighting, and heating equipment.

POLICY SE.1.3 Enhance the energy efficiency of all City facilities.

Action SE.1.3.1 Conduct energy audits for all public facilities, as feasible.

Action SE.1.3.2 Retrofit facilities for energy efficiency where feasible. Include items such as increased insulation, green or reflective roofs, and low-emissive window glass.

Action SE.1.3.3 Implement an energy tracking and management system for City departments and public facilities.

Action SE.1.3.4 Work with Public Works to install energy-efficient lighting retrofits and occupancy sensors on public facilities.

POLICY SE.1.4 Require all newly constructed, purchased, or leased municipal buildings or facilities meet minimum standards for green building as appropriate.

Action SE.1.4.1 Consider setting standards for green building for public facilities that include a minimum LEED certification and integrate solar design, heat-minimizing features such as cool paving, landscaping, pervious surfaces, and other appropriate techniques.

POLICY SE.2.1 Support the efforts of community groups, including the Pinole Valley High School Environmental Academy, to educate the public about sustainability and climate change.

Action SE.2.1.1 Assist in the creation of effective educational materials and outreach efforts relating to climate change.

Action SE.2.1.2 Support the Development and implementation of a program to present educational information to schoolchildren about climate change and behaviors that reduce GHG emissions and mitigate the effects of climate change.

Action SE.2.1.3 Acknowledge outstanding local efforts (private and public) that support the City's sustainability goals, including the reduction of GHG emissions.

Action SE.2.1.4 Consider establishing and/or sponsor competitions, or contests that promote climate protection, reducing GHG emissions, or fund-raising to support community climate protection programs.

Action SE.2.1.5 Support student participation in local efforts to combat or raise awareness about climate change and GHG emissions.

POLICY SE.2.2 Pinole should continue to encourage a vital economy that supports green businesses and green industry.

Action SE. 2.2.1 Through the Redevelopment Agency and education programs, create a "Green Jobs Incubator" to help create more green jobs and offer green job training opportunities.

Action SE.2.2.2 Join the Bay Area Green Business Program, a partnership of environmental agencies, professional associations, waste management agencies, utilities and a concerned public.

Action SE.2.2.3 Support and encourage conveniently located child care services with flexible hours.

POLICY SE.3.3 Pinole will mitigate climate change by decreasing heat gain from pavement and other hard surfaces associated with infrastructure (i.e. heat island effect).

Action SE.3.3.1 Reduce heating and cooling loads by promoting light-colored roofs and paving materials, planting trees, and increasing vegetative cover.

Action SE.3.3.2 Where possible, use parkway strips to allow shading of streets by trees.

Action SE.3.3.3 Require the use of shade trees on south- and west-facing sides of structures, where possible.

Action SE.3.3.4 Include low-water landscaping in place of hardscaping around transportation infrastructure and in parking areas.

Action SE.3.3.5 Where feasible, require the use of pervious pavement options.

Action SE.3.3.6 Where feasible, require the use of edible landscaping and low-water landscaping.

POLICY SE.4.2 Explore opportunities for City-wide expansion of Programs and Facilities related to energy efficiency and conservation.

Action SE.4.2.1 Continue to identify and remove regulatory or procedural barriers to producing renewable energy in building and development codes, design guidelines, and zoning ordinances. Work with related agencies in areas such as fire, water, and health that may impact the use of alternative technologies. Actively participate in the development protocols for alternative energy storage such as biodiesel, hydrogen, and/or compressed air.

Action SE.4.2.2 Provide energy conservation information to the public.

Action SE.4.2.3 Provide information to planning and building staff and citizen review bodies regarding energy conservation and efficiency issues, including Pinole's energy conservation policies, and work with applicants to achieve energy conservation goals.

Action SE.4.2.4 Provide technical assistance to builders and developers to encourage sustainable and energy efficient building design.

POLICY SE.4.3 Pinole will promote and require renewable energy generation and co-generation where feasible and appropriate.

Action SE. 4.3.1 Require that new office/retail/commercial or industrial development, or major rehabilitation (e.g. additions of 25,000 square feet commercial, or 100,000 square feet industrial) incorporate renewable energy generation either on- or off-site to provide 15% or more of the project's energy needs.

POLICY SE.4.4 Identify opportunities for creating energy conservation and efficiency programs for application in Pinole facilities, residences, schools and local businesses.

Action SE.4.4.1 Utilize energy-efficient products for City equipment purchases where feasible.

Action SE.4.4.2 Continue to conduct energy audits of Pinole facilities and implement energy efficiency and retrofitting recommendations from those audits. Seek funding from available state sources and grant opportunities, as well as the CIP.

Action SE.4.4.3 Where feasible and appropriate, transition to LED/energy efficient lights in all City facilities and equipment.

Action SE.4.4.4 Set a target to meet a majority of the City's energy needs via renewable energy.

Action SE.4.4.5 Explore funding sources and mechanisms for energy efficiency improvements for residences. (ex: AB 811, which provides cities ways to fund energy efficiency improvements via assessments).

POLICY SE.4.5 Pinole will continue to promote and support and require, where appropriate, the development of solar energy.

Action SE.4.5.1 Require that, where feasible, all new buildings be constructed for easy, cost-effective installation of solar energy systems. This should include requiring such features as optimal roof orientation, clear access without obstructions, and appropriate roof framing and wiring.

Action SE.4.5.3 Require that any building constructed in whole or in part with City funds incorporate passive solar design features such as daylighting and passive solar heating, where feasible.

Action SE.4.5.4 Pinole will protect active and passive solar design elements and systems from shading by neighboring structures and trees, as consistent with existing tree shading requirements.

POLICY SE.4.6 Pursue and provide economic incentives and creative financing for renewable energy projects, as well as other support for community members or developers seeking funding for such projects.

Action SE.4.6.1 Provide, where possible, grants, rebates, and incentives for renewable energy projects, including reduced fees and expedited permit processing.

Action SE.4.6.2 Pinole will provide, where feasible, creative financing for renewable energy projects, including subsidized or other low-interest loans, and the option to pay for system installation through long-term assessments on individual property tax bills.

Action SE.4.6.3 Pinole will pursue partnerships with other governmental entities and with private companies and utilities to establish incentive programs for renewable energy.

POLICY SE.4.7 Pinole will implement measures to support the purchase and use of renewable and alternative energy.

Action SE.4.7.1 Evaluate the feasibility and effectiveness of using Community Choice Aggregation as a model for providing renewable energy to meet Pinole's electricity needs, including potential partnerships with other jurisdictions.

POLICY SE.6.1 Develop local green building and energy efficiency standards.

Action SE.6.1.1 Develop a Green Building Ordinance to require green building standards be utilized such as the use of renewable energy, efforts to improve air and water quality, and to conserve natural resources. Other areas to address in the Ordinance include building orientation and shading, landscaping, solar orientation, and sustainable building materials.

Action SE.6.1.2 Investigate sliding-scale building permit fees with rebates and/or expedited permit review for high-performance green buildings and higher fees for conventional buildings. .

POLICY SE.6.2 Explore the establishment of an energy plans examiner and a required field inspection of energy systems to ensure maximization of energy efficiency.

Action SE.6.2.1 Reduce energy consumption in buildings by balancing energy-efficient design with land use compatibility during the design review process.

POLICY SE.6.6 Collaborate with other local jurisdictions to share resources, and develop sustainable and resource efficient building policies and programs that are optimized for the region. This approach may include the following:

- Optional or incentive-based sustainable building provisions to encourage compliance.
- Conservation of natural resources when planning site development.
- Use of resource efficient building materials, including recycled-content materials.
- Promotion of water efficiency and conservation measures, including low-impact development strategies.
- Increased energy efficiency in building and site designs.
- Promotion of the use of renewable energy in new development proposals.
- Improved indoor air quality that includes the use of formaldehyde-free, non-toxic construction materials.

POLICY SE.6.7 Where feasible, install energy efficient and/or reflective roofing materials on existing or new City facilities.

POLICY SE.7.1 Continue working with the Bay Area Air Quality Management District and other regional agencies to:

1. Improve air quality through pollution prevention methods.
2. Ensure enforcement of air emission standards.
3. Reduce local and regional traffic (the single largest source of air pollution in the city) and support public transit improvements.
4. Promote regional air pollution prevention plans for business and industry.
5. Promote strategies to reduce particulate pollution from residential fireplaces and wood-burning stoves.

6. Locate parking appropriately and provide adequate signage to reduce unnecessary "circling" and searching for parking.
7. Promote anti-idling policies and programs.

POLICY SE.7.2 Support the expansion of tree planting and landscaping practices that encourage the use of trees, plants, and vegetation to improve air quality to enhance the scenic quality of the City.

Action SE.7.2.1 Establish tree planting targets in order to reduce or sequester greenhouse gas emissions, provide for energy efficiency, and to enhance the City's quality of life.

Action SE.7.2.2 Pursue funding for private and public park and street tree planting.

Action SE.7.2.3 Establish and maintain a Pinole tree planting guide to encourage tree planting, reduce long-term maintenance costs, reduce fire hazards, improve energy efficiency, and enhance the quality of the community over time.

Action SE.7.2.4 Develop landscape standards that require minimum planting and maintenance requirements for new and retrofit development and the use of native or drought-tolerant vegetation.

POLICY SE.7.3 Increase public awareness of air quality problems, rules and solutions through use of City publications and networks.

POLICY SE.7.4 Reduce methane emissions released from waste disposal. Encourage recycling, decrease waste sent to landfills, require landfill methane recovery and promote methane recovery for energy production from other sources.

POLICY SE.7.5 Research and consider a set of standards that provide a set of voluntary measures to incorporate clean vehicles in private fleets and promote the use of clean alternative fuels.

POLICY SE.7.6 Continue to encourage innovative technologies and programs such as clean-fuel, electric and low-emission cars that reduce the air quality impacts of the automobile.

POLICY SE.7.7 Support alternate work schedules where feasible. Encourage employers to allow alternate work schedules for employees, telecommuting and other practices that reduce auto trips.

POLICY SE.7.8 In order to reduce vehicle miles traveled and traffic congestion, new development within 1,000 feet of an existing or planned transit stops should be designed to encourage the usage of public transit and minimize the dependence on the automobile through the application of site design guidelines.

Action SE.7.8.1 Develop a TDM program for Pinole that includes such improvements as bike parking, showers for employees, etc.

POLICY SE.7.9 Air quality will be maintained and improved by requiring project mitigation, such as Transportation Demand Management (TDM) techniques, where significant air quality impacts are identified.

POLICY SE.7.10 Air quality should not decline from levels experienced during the early 1990s, when the community's growth capacity was last re-examined.

POLICY SE.8.1 Encourage alternatives to single-occupancy vehicle use, including using public transit, carpooling, teleworking, bicycling and walking.

Action SE.8.1.1 Publicize and participate in campaigns to promote options to single-occupancy vehicle travel.

Action SE.8.1.2 Continue and expand projects that increase pedestrian accessibility to transit stops, neighborhood shopping areas, schools, churches and parks.

Action SE.8.1.3 Provide maps highlighting alternative modes of transportation and preferred routes for those modes.

Action SE.8.1.4 Explore parking pricing to all appropriate commercial areas to reduce single-occupancy vehicle use.

Action SE.8.1.5 Educate all employees on fuel-efficient driving practices, such as avoiding unnecessary idling.

Action SE.8.1.6 Explore providing City employees with transit subsidies for travel on business to improve air quality and reduce greenhouse gas emissions.

Action SE.8.1.7 Include sidewalks, separated sidewalks whenever possible, on both sides of all new street improvement projects, except where there are severe topographic or natural resource constraints.

Action SE.8.1.8 Whenever feasible, ensure transit stops are safe and sheltered, with clean benches and adequate lighting.

POLICY SE.8.2 Encourage development of a planning and zoning strategy to absorb all new growth in the city in areas that achieve transit-supportive densities through strategic development controls.

Action SE.8.2.1 Adopt a specific plan for Pinole's transit corridors.

Action SE.8.2.2 Ensure transportation centers are multi-modal to allow transportation modes to intersect.

POLICY SE.8.3 Encourage housing opportunities for all income levels to ensure that workers in Pinole can live in the City and reduce the need for outbound commuting for employment.

POLICY SE.8.4 Consider the creation of a citywide transportation business improvement district in which commercial property owners would fund a private transportation service, which would be operated by a nonprofit Transportation Management Association. The transportation service could operate a shuttle to provide essential connectivity to points within and outside Pinole while also helping to alleviate congestion.

POLICY SE.8.6 Establish parking policies and requirements that capture the true costs of private vehicle use and support alternative modes of transportation.

Action SE.8.6.1 Encourage shared parking opportunities, such as movie theaters with primary parking needs in evenings and churches or other facilities with weekend-only parking needs.

Action SE.8.6.2 Consider reducing minimum parking requirements for new development.

Action SE.8.6.3 Continue to encourage shared parking programs in mixed-use and transit-oriented development.

Action SE.8.6.4 Consider using time limited/metered parking to discourage private vehicle use, especially at peak times.

Action SE.8.6.5 Require that new and fully renovated commercial and retail development provide preferential parking for electric vehicles and vehicles using alternative fuels.

POLICY SE.8.7 Work to improve Pinole's pedestrian and bicycle infrastructure and to meet the needs of all pedestrians bicyclists.

Action SE.8.7.1 Implement public transit-, bicycle- and pedestrian-oriented land use and design strategies in new development, as described in the Land Use and Circulation Elements of the General Plan to reduce the number of single-occupant trips in fossil-fueled vehicles.

Action SE.8.7.2 Consider establishing a "free bicycle" program with bicycles that the public may borrow for trips around Pinole.

Action SE.8.7.3 Require new commercial, multi-family residential, and mixed-use development to provide secure bicycle parking.

Action SE.8.7.4 The City will set a deadline by which it will be assured that all city parks, schools, commercial districts, and other high-volume trip destinations within Pinole provide secure bicycle parking.

Action SE.8.7.5 Establish and implement standards that meet or exceed state law for "complete streets" that foster equal access by all users in the roadway system. Include standards that address connection of bicycle and pedestrian access to other areas, safe road crossings, adequate and secure bike parking at public and private facilities, and street standards as is feasible for bicycle infrastructure.

Action SE.8.7.6 Apply for regional, state, and federal grants for bicycle and pedestrian infrastructure projects.

POLICY SE.8.9 Implement traffic and roadway management strategies to improve mobility and efficiency and reduce associated emissions. (See Circulation Element).

POLICY SE.8.10 Support and promote the use of low- and zero-emission vehicles, alternative fuels, and other measures to directly reduce emissions from motor vehicles.

Action SE.8.10.1 Develop the necessary infrastructure to encourage the use of zero-emission vehicles and clean alternative fuels, such as development of electric vehicles charging facilities and alternative fueling stations.

Action SE.8.10.2 Encourage new construction to include vehicle access to properly wired outdoor receptacles to accommodate plug-in vehicles.

Action SE.8.10.3 Establish incentives for use of alternative fuel, electric, or gas-electric hybrid vehicles.

POLICY SE.34.1 Explore and promote opportunities for the City's use of sustainable energy sources (e.g. solar, wind, biomass, tidal energy generation, methane, geothermal, and hydropower).

Action SE.4.1.1 Utilize, where feasible, renewable energy and clean generation technologies such as solar, wind, biogas, tidal, cogeneration, and fuel cells to power City facilities using tax-free low-interest loans and other available financial options.

Action SE.4.1.2 Evaluate the feasibility of purchasing renewable energy certificates to reduce the City's contribution to greenhouse gas emissions.

Action SE.4.1.3 Designate suitable sites to prioritize their development for renewable energy generation.

Action SE.4.1.4 Adopt measures to protect the renewable energy use of the sites and their resources, such as utility easements, rights-of-way, and land set-asides.

Circulation Element

POLICY CE.1.1 Encourage strategic growth that concentrates future development along Pinole's three primary transit corridors (San Pablo Avenue, Appian Way and Pinole Valley Road).

Action CE.1.1.1 Adopt and implement the Three Corridors Specific Plan.

Action CE.1.1.2 Adopt a Resolution of Support for the designation of Appian Way, San Pablo Avenue and Pinole Valley Road as Preferred Development Areas (PDAs).

Action CE.1.1.3 Apply for grants and other funding, as appropriate to implement the PDAs.

POLICY CE.1.2 Coordinate development of the circulation system with sustainable land use planning.

Action CE.1.2.1 Give priority to projects that will contribute to a reduction in vehicle miles traveled per capita, while maintaining economic vitality and sustainability.

Action CE.1.2.2 Require development to provide bus, bicycle, pedestrian and alternative fuel vehicle facilities, as appropriate.

Action CE.1.2.3 Provide safe and convenient access for pedestrians and bicyclists, wherever feasible.

POLICY CE.1.3 Encourage development that is sensitive to both local and regional transit measures and that promotes the use of alternative modes of transportation.

Action CE.1.3.1 Consult with transit providers during review of development proposals.

Action CE.1.3.2 Include facilities that support alternative modes of transportation (pedestrian, bicycles, public transit, electric vehicles, etc.) where feasible.

POLICY CE.1.4 Encourage maximum utilization of the existing public transit system and alternate modes of transportation in Pinole.

Action CE.1.4.1 Study the feasibility of increasing public transit frequency in areas currently served, and continue evaluating the possibility of expanding service to areas currently without service.

Action CE.1.4.2 Include links to public transit resources, bike trails maps, pedestrian trails maps and carpool/van pool information on the City's website.

Action CE.1.4.3 Pursue extension of rapid bus service to Pinole and enhance transit facilities that serve Pinole users.

Action CE.1.4.4 Support provision of wayfinding signage and markers for transit stops and multi use trails.

POLICY CE.1.5 Encourage transit facilities that will provide good access to major public facilities and employment centers in the city.

Action CE.1.5.1 Enhance existing and provide additional bus shelters and other amenities that support transit use, where feasible and appropriate.

POLICY CE.1.6 Encourage transit services between major employment centers in each area of the city and surrounding communities.

Action CE.1.6.1 Coordinate the integration of local and regional transit with transportation agencies and other jurisdictions.

Action CE.1.6.2 Work with WestCAT, AC Transit and other transit providers to support expanded transit lines and increased frequency of service on major transit arterials.

POLICY CE.5.1 Provide off-street parking to employees; however preferential parking at several locations in the city shall be made available to vanpools, carpools, alternative fuel vehicles and other transit users, where feasible and appropriate.

Action CE.5.1.1 Continue to encourage shared parking facilities for both private businesses and public agencies.

Action CE.5.1.2 Continue to maintain the Old Town parking district as described in Figure 7.5.

POLICY CE.5.3 Work with various government agencies to provide secure parking at park-and-ride lots and transit stations.

POLICY CE.5.4 Establish parking policies and requirements that support alternative modes of transportation.

Action CE.5.4.1 Allow Reduction of minimum on-site parking requirements for development that includes exceptional features that support multiple modes of transportation.

Action CE.5.4.2 Encourage shared parking programs in mixed-use and transit-oriented development areas.

POLICY CE.6.1 Encourage the use of carpooling and vanpooling to maintain an acceptable LOS on city streets and I-80.

Action CE.6.1.1 Designate a certain percentage of parking spaces for ride-sharing vehicles.

Action CE.6.1.2 Require the development of Transportation Management Associations (TMA) for large employers and commercial/industrial complexes. These TMAs would develop plans to encourage their employees to use some form of collective transportation to commute to and from work. These plans should include not only information regarding rideshare lists and available transit, but may also include provision of transit passes, preferential parking and other incentives to participating employees.

POLICY CE.6.2 Implement transportation demand management strategies in conjunction with land uses in order to prevent future traffic congestion in the city.

Action CE.6.2.1 Coordinate with ride-sharing programs to provide up-to-date lists of potential riders and to educate the public on commuting options.

Action CE.6.2.2 Encourage the development of employer-funded vanpool and shuttle bus services to new employment centers.

Action CE.6.2.3 Encourage employer provision of information on alternative modes of transit.

Action CE.6.2.4 Encourage employers to offer flextime arrangements to their employees in order to reduce the percentage of trips made during peak hours.

Action CE.6.2.5 Work with schools to encourage carpooling and a flexible class schedule in order to reduce the percentage of trips made during peak hours.

Action CE. 6.2.6 Establish and apply minimum carpool requirements for all non-residential developments

POLICY CE.6.3 Strive to achieve a 30 percent reduction in the total number of peak period employee trips.

Action CE.6.3.1 Encourage and utilize shuttles to serve neighborhoods, employment centers and major destinations.

Action CE.6.3.2 Work with existing shuttle service providers to coordinate their services with other forms of transit, special events and work centers.

Action CE.6.3.3 Encourage home offices, live/work sites and satellite work centers in appropriate locations.

Action CE.6.3.4 Encourage telecommuting options through public outreach and with new and existing employers, as appropriate.

Action CE.6.3.5 Explore the potential for creation of a transportation assessment district to help fund transportation improvements and repairs throughout the city.

Action CE.6.3.6 Explore the creation of a network of park and ride facilities to support and encourage the use of regional transit.

Action CE.6.3.7 Identify and correct gaps in the pedestrian travel network, whenever feasible.

POLICY CE.7.1 Enhance the city's bikeway network through the use of Class I, II and III bikeways.

Action CE.7.1.1 Develop street design and bikeway design standards to address all street users, autos, public transit, bicycles and pedestrians of all ages and abilities.

Action CE.7.1.2 Prepare and regularly update a Pinole bikeways map and make it available on the city's website.

Action CE.7.1.3 Provide safe access to public transportation and other non-motorized uses through construction of dedicated bicycle paths.

POLICY CE.7.2 Establish standards for new development and redevelopment projects to support bicycle use.

Action CE.7.2.1 Establish engineering standards for pedestrian and bicycle facilities.

Action CE.7.2.2 Require provision of adequate, convenient, and secure bike parking in conjunction with private development.

Action CE.7.2.3 Provide public bike parking as funding is available.

Action CE.7.2.4 Require projects to include bicycle facilities, as appropriate.

POLICY CE.7.3 Establish a network of multi-use paths to facilitate safe and direct off-street bicycle and pedestrian travel.

Action CE.7.3.1 Where feasible, provide bike racks along these trails at safe, lighted locations.

Action CE.7.3.2 Pursue enhanced funding for bicycle and pedestrian facilities and access projects.

Action CE.7.3.3 Adopt bicycle parking standards that encourage and facilitate bicycle travel.

Action CE.7.3.4 Minimize bicycle/pedestrian/motor vehicle conflicts by providing proper trail, street and intersection design and separation.

POLICY CE.7.4 Establish bicycle safety as a priority through ongoing public education.

Action CE.7.4.1 Assist in the development and dissemination of public education programs to promote bicycle safety.

POLICY CE.8.1 Require development to provide pedestrian walkways that are safe, interconnected, and accessible by all members of the community

Action CE.8.1.1 As feasible, ensure that all intersections in areas with pedestrian usage are signalized with curb ramps, bulbouts, high-contrast crosswalks and pedestrian actuation, and other safety measures.

Action CE.8.1.2 Where feasible, use landscaping or physical barriers on high-capacity arterials to separate vehicles and pedestrians.

POLICY CE.8.2 Encourage the community to take advantage of Pinole's pedestrian facilities and recreational opportunities and increase non-motorized modes of transportation.

POLICY CE.8.3 Design access ways to school facilities that will ensure public safety.

Action CE.8.3.1 In conjunction with the public school system and other appropriate public facilities and programs, assist in developing public education programs to promote pedestrian safety.

Action CE.8.3.2 Ensure that all intersections near schools are signalized with curb ramps, high-contrast crosswalks and pedestrian actuation, where feasible.

Action CE.8.3.3 Actively support the Safe Routes to Schools program, including making use of available funding and technical assistance.

POLICY CE.8.4 Encourage the location of basic shopping and services within walkable distances to residential areas.

Action CE.8.4.1 Use strategic planning to establish land use patterns that encourage mixed-use, walkable development.

In addition to the policies and actions noted above, the proposed General Plan Update includes numerous additional goals, policies and actions that would reduce VMT within the City and would promote energy and resource conservation. These goals, policies and actions would reduce air quality impacts. However, given that projected future population and VMT associated with the proposed GPU would still be anticipated to conflict with projections used for air quality planning purposes, this impact remains ***significant and unavoidable.***

Violate Air Quality Standard or Contribute Substantially to an Air Quality Violation: Short-Term, Construction Emissions

Impact 2 Subsequent land use activities associated with implementation of the proposed General Plan Update could result in short-term construction emissions that could violate or substantially contribute to violations of federal and state ambient air quality standards. This impact is considered to be **potentially significant**.

Implementation of the proposed General Plan Update will result in short-term emissions from construction activities associated with subsequent development, including site grading, asphalt paving, building construction, and architectural coating. Emissions commonly associated with construction activities include fugitive dust from soil disturbance, fuel combustion from mobile heavy-duty diesel- and gasoline-powered equipment, portable auxiliary equipment, and worker commute trips. During construction, fugitive dust, the dominant source of PM_{10} and $PM_{2.5}$ emissions, is generated when wheels or blades disturb surface materials. Uncontrolled dust from construction can become a nuisance and potential health hazard to those living and working nearby. Demolition and renovation of buildings can also generate PM_{10} and $PM_{2.5}$ emissions. Off-road construction equipment is often diesel powered and can be a substantial source of NO_X emissions, in addition to PM_{10} and $PM_{2.5}$ emissions. Worker commute trips and architectural coatings are dominant sources of ROG emissions.

The amount of emissions generated would vary, by project, depending on numerous factors, including the size of the development and construction activities required. Furthermore, it is anticipated that multiple construction projects could occur simultaneously within a given year. Without detailed construction information (i.e., construction schedules, demolition, grading, excavation, and construction requirements), construction emissions for individual projects

cannot be quantified. Given these limitations, construction-generated emissions associated with development that would occur as part of the General Plan Update cannot be quantified at this time. Although many of the individual construction projects would likely not generate construction emissions that would exceed BAAQMD's project-level significance thresholds, some development projects may be large enough such that the project-level significance thresholds would be exceeded. It should be noted that all projects in the City would be subject to applicable BAAQMD rules and regulations in effect at the time of construction. In addition, future development would also be subject to subsequent environmental review. In the event that a significant impact is identified for an individual project, BAAQMD-recommended mitigation measures would be required to reduce project-related impacts. However, even with mitigation, it may not be possible to reduce potential emissions to levels below the BAAQMD thresholds. As a result, this impact would be considered significant.

Proposed General Plan Update Policies and Actions that Provide Mitigation

The proposed General Plan Update contains the following list contains those policies and actions that include specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

POLICY SE.7.1 Continue working with the Bay Area Air Quality Management District and other regional agencies to:

1. Improve air quality through pollution prevention methods.
2. Ensure enforcement of air emission standards.
3. Reduce local and regional traffic (the single largest source of air pollution in the city) and support public transit improvements.
4. Promote regional air pollution prevention plans for business and industry.
5. Promote strategies to reduce particulate pollution from residential fireplaces and wood-burning stoves.
6. Locate parking appropriately and provide adequate signage to reduce unnecessary "circling" and searching for parking.
7. Promote anti-idling policies and programs.

POLICY SE.7.9 Air quality will be maintained and improved by requiring project mitigation, such as Transportation Demand Management (TDM) techniques, where significant air quality impacts are identified.

Mitigation Measures

Implementation of the above proposed General Plan Update policies, actions would require implementation of mitigation measures to reduce air quality impacts and would ensure enforcement of air emission standards through continued coordination with the BAAQMD. Implementation of the proposed policies and actions would reduce potential construction-related air quality impacts. However, these actions would not fully offset air pollutant emissions resulting from construction activities. Increases in construction-generated emissions may contribute to future nonattainment conditions. Thus, this impact is considered **significant and unavoidable**.

Violate Air Quality Standard or Contribute Substantially to an Air Quality Violation: Long-Term, Operational Emissions

Impact 3 Subsequent land use activities associated with implementation of the proposed General Plan Update could result in long-term, operational emissions that could violate or substantially contribute to violations of federal

and state ambient air quality standards. This impact is considered to be **significant**.

As discussed in **Impact 1**, implementation of the General Plan Update would result in the development and operation of new land uses, which would generated increased air emissions. For comparison purposes, projected increases in emissions associated with projected future development, with and without implementation of the proposed project, are summarized in **Table 6**. As depicted, the proposed General Plan Update would result in net increases of approximately 15.71 tons/year of ROG, 20.92 tons/year of NO_X, 24.71 tons/year of PM_{10}, and 4.74 tons/year of $PM_{2.5}$. The emissions estimates are based on gross land use data and actual emissions may vary, depending on various factors, such as the type and size of the development proposed and emission reduction strategies incorporated. The estimates are useful, however, in providing an understanding of the City's emissions inventory and overall increases that could potentially occur associated with future development. According to these estimates, mobile sources are the largest contributor to the City's projected future emissions inventory. Future development attributable to the proposed General Plan Update would be anticipated to result in increased emissions from both area and mobile sources.

BAAQMD project-level thresholds of significance apply to individual development projects and do not apply to cumulative development or multiple development projects. As with construction-related impacts, supplemental project-specific air quality analyses would be required to analyze operational emissions of individual development projects, in comparison to BAAQMD-recommended project-level significance thresholds. Mitigation measures would be required to reduce potentially significant impacts. However, given that a majority of operational emissions would be attributable to increases in VMT, it may not be possible to reduce potential emissions of individual projects to levels below the BAAQMD BAAQMD-recommended project-level significance thresholds, even with implementation of all available mitigation measures. In addition, as noted in **Impact 1**, increases in VMT attributable to future development, and associated emissions, would be inconsistent with the BAAQMD's Clean Air Plan. For these reasons, this impact would be considered **significant**.

TABLE 6
PROJECTED INCREASES IN AREA-SOURCE EMISSIONS

Scenario	Annual Emissions (tons/year)			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
2030 Baseline				
Area Sources	12.28	6.16	0.01	0.01
Mobile Sources	108.63	162.96	235.86	45.14
Total:	120.91	169.12	235.87	45.15
2030 with Proposed General Plan Update				
Area Sources	16.62	10.01	0.02	0.02
Mobile Sources	120.00	180.03	260.56	49.87
Total:	136.62	190.04	260.58	49.89
Net Increase:	*15.71*	*20.92*	*24.71*	*4.74*

Notes: Emissions were quantified using the URBEMIS2007 computer program. Area source emissions include emission associated with natural gas use, landscape maintenance, architectural coatings and consumer products. Based on the following assumptions:

2030 Baseline: Assumes 1,270 dwelling units, 1,122.14 KSF retail, 909.74 KSF office, and 476.283 KSF industrial; includes

emissions associated with use of consumer projects assuming 0.0171 lbs/person, net increase of 2,417 individuals. Assumes 750,000 VMT/day.

2030 with Preferred Project: Assumes 2,346 dwelling units, 1,553.23 KSF retail, 1,422.21 KSF office, and 472.58 KSF industrial; includes emissions associated with use of consumer projects assuming 0.0171 lbs/person, net increase of 2,970 individuals. Assumes 830,000 VMT/day.

Proposed General Plan Update Policies and Actions that Provide Mitigation

As noted previously, the General Plan Update includes a number of policies and actions that would reduce the potential impacts associated with long-term operation emissions. Applicable policies and actions are listed under **Impact 1**.

Mitigation Measures

Implementation of the above proposed General Plan Update policies and actions would reduce potential long-term, operational air quality impacts. However, these actions would not fully offset long-term increases in emissions associated with build-out of the General Plan Update. Thus, this impact is considered **significant and unavoidable**.

Exposure of Sensitive Receptors to Substantial Concentrations of Mobile-Source Carbon Monoxide

Impact 4 Implementation of the proposed General Plan Update would result in increased population and employment that would increase traffic volumes on area roadways. This could result in elevated carbon monoxide emissions from motor vehicle congestion that could expose sensitive receptors to elevated carbon monoxide concentrations. As a result, this is considered to be a **significant impact.**

Localized carbon monoxide (CO) concentrations near roadway intersections are a function of traffic volume, speed, and delay. Transport of CO is extremely limited because it disperses rapidly with distance from the source under normal meteorological conditions. Under specific meteorological conditions, CO concentrations near roadways and/or intersections may reach unhealthy levels with respect to sensitive receptors, often referred to as a "CO hotspot."

The BAAQMD recommends use of a screening approach to determine if long-term, project operations would have the potential to create a violation of the ambient air quality standards for CO. Based on BAAQMD guidance, projects meeting the following screening criteria would be considered to have a less -than-significant impact to localized CO concentrations (BAAQMD 2010(a)):

- Project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans; and

- The project would not result in an affected intersection experiencing more than 44,000 vehicles per hour or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

The Congestion Management Program (CMP) requires each jurisdiction to identify existing and future transportation facilities that would operate below an acceptable service level and provide mitigation where future growth would degrade that service level. The Contra Costa Transportation Authority (CCTA) serves as the Congestion Management Agency responsible for the CMP. As part of western Contra Costa County, the City of Pinole works with other west county jurisdictions through the West Contra Costa Transportation Advisory Committee (WCCTAC) to develop the West County Action Plan. The Action Plan identifies multi-modal traffic service objectives (MTSOs) for Routes of Regional Significance, which in Pinole include the freeway (I-80) and arterial streets (San Pablo Avenue and Appian Way). On these arterials, the MTSO sets a target level of service. The West County Action Plan was adopted on July 31, 2009 (Dowling Associates 2010).

Based on the traffic analysis prepared for this project, peak hour volumes at several intersections along key corridors serving Pinole, such as San Pablo Avenue, Appian Way, and Pinole Valley Road, would approach or exceed the capacity of the intersection, resulting in unacceptable levels of service at four area intersections located along these roadway segments. Under General Plan build-out conditions, the intersections of Tennent Avenue at San Pablo Avenue, Pinole Valley Road at San Pablo Avenue, Pinole Valley Road at I-80 eastbound ramps, and John Street at San Pablo Avenue would be anticipated to be primarily affected, operating at levels of service of LOS E, or worse. However, traffic volumes under peak-hour conditions at these intersections would not be projected to exceed the BAAQMD's screening criteria of 44,000 vehicles per hour. In addition, these intersections would not experience limitations with regard to vertical or horizontal mixing (e.g., tunnel, bridge underpass, etc.). However, as noted in the traffic analysis prepared for this project, implementation of the proposed General Plan Update would conflict with the objectives identified in the West County Action Plan. As a result, this impact is considered **significant**.

Proposed General Plan Update Policies and Actions that Provide Mitigation

Action CE.3.1.1 of the proposed General Plan Update directs the City to work with WCCTAC and CCTA to revise the MTSO for San Pablo Avenue within Old Town to LOS F. This Action provides mitigation to eliminate the conflict between the West County Action Plan and the proposed General Plan Update related to the Old Town segment of San Pablo Avenue.

Mitigation Measures

Based on the traffic analysis prepared for this project, maintaining the existing level of service performance standards along San Pablo Avenue and Appian Way would ensure consistency with MTSO and would mitigate the project impact. To address the proposed LOS change for Appian Way, the traffic analysis recommends modification of the proposed Action CE.3.1.1 to include revisions to the Action Plan Level of Service standard for Appian Way between Mann Drive and I-80. With implementation of Action CE.3.1.1 and the proposed traffic and circulation mitigation measure, the proposed project would be consistent with the BAAQMD's screening criteria. This impact would be considered **less than significant**.

Exposure of Sensitive Receptors to Substantial Concentrations of Toxic Air Contaminant and/or Fine Particulate Matter

Impact 5 Subsequent land use activities associated with implementation of the proposed General Plan Update could result in projects that would include sources of toxic air contaminants which could affect surrounding land use. Subsequent land use activities could also place sensitive land uses near

existing sources of toxic air contaminants. These factors could result in the exposure of sensitive receptors to substantial concentrations of toxic air contaminants and/or fine particulate matter. This is considered a **potentially significant** impact.

Subsequent land use activities associated with implementation of the proposed General Plan Update could potentially include short-term, construction sources of toxic air contaminants (TACs) and long-term, operational sources of TACs, including stationary and mobile sources.

Short-Term Exposure

Construction projects can result in short-term increases of TACs, as well as, emissions of airborne fugitive dust. Emissions of diesel particulate matter (DPM) emitted from diesel-fueled construction vehicles is of particular concern. Exposure to DPM results in a greater incidence of chronic non-cancer health effects, such as cough, labored breathing, chest tightness, wheezing, and bronchitis. However, various other TACs from diesel exhaust also contribute to both cancer and non-cancer health risks. Construction-generated emissions of fine particulate matter ($PM_{2.5}$) can also contribute to significant health impacts, particularly among the more sensitive population groups (i.e., children, elderly, etc.).

The amount of TACs generated during construction of individual projects would vary depending on numerous factors, including the size of the development, the type, age and number of pieces of equipment required, and hours of use. Furthermore, it is anticipated that multiple construction projects could occur simultaneously within a given year and within a given area. Without detailed construction information (i.e., construction schedules, demolition, grading, excavation, and construction requirements), construction-generated emissions of TACs for individual projects cannot be quantified at this time.

To assist local jurisdictions in the analysis of potential health risks associated with short-term construction projects, the BAAQMD will be developing screening criteria that can be applied at the project level (BAAQMD 2010(a)). Depending on the construction activities required and distances to nearby receptors, it is conceivable that some development projects may be large enough such that the project-level significance thresholds would be exceeded. In the event that a significant impact is identified for an individual project, BAAQMD-recommended mitigation measures would be required to reduce project-related impacts. However, even with mitigation, it may not be possible to reduce potential emissions of TACS and all health-related risks to nearby receptors to levels below the BAAQMD thresholds. As a result, this impact would be considered **significant**.

Long-Term Exposure

Development of future land uses may include potential stationary sources of TACs, such as diesel-powered emergency-use power generators. The type and level of TAC emissions emitted would depend upon the nature of the land use and the specific methods and operations that involve toxic air emissions. Pursuant to BAAQMD rules and regulations, including BAAQMD Regulation 2, Rule 5 (new Source Review of Toxic Air Contaminants), major stationary sources having the potential to emit TACs are required to obtain permits from the BAAQMD. Permits may be granted to these operations provided they are constructed and operated in accordance with applicable BAAQMD rules and regulations. Given that compliance with applicable standards and regulations would be required, TAC emissions from new major stationary sources would not be anticipated to result in an increased risk to nearby sensitive receptors that would exceed applicable significance thresholds. However, some proposed

projects may include the operation of non-permitted sources of TAC and/or $PM_{2.5}$ emissions. For instance, projects that would attract high numbers of diesel-powered on-road haul trucks or use off-road diesel equipment on site, such as a distribution center or manufacturing facilities, could potentially expose receptors to substantial risk levels and/or health hazards (BAAQMD 2010(a)).

In addition to long-term exposure to stationary emission sources, new land uses may also be exposed to emissions from mobile sources. To assist local jurisdictions in the evaluation of community risk and hazard impacts, the BAAQMD recommends that general plans: 1) special overlay zones be established around existing and planned land uses that emit TACs, 2) establish special overlay zones of at least 500 feet on each side of all freeways and high-volume roadways; and 3) identify goals, policies, and objectivies to minimize potential impacts and create overlay zones for sources of TACs and receptors (BAAQMD 2010(a)).

Within the City of Pinole, I-80 is considered the major source of TAC emissions. To a lesser extent, trains traveling along the UPRR and BNSF railroad corridors also contribute to localized concentrations of TACs within the community. However, as noted in **Table 4**, ARB considers major service and maintenance rail yards as potential sources of TACs. The operation of rail lines outside of rail yards has not been identified as a major source of TACs that pose a significant risk to sensitive receptors. The nearest major rail yard is located near Point Richmond, approximately 6 miles southwest of the City of Pinole. No major stationary sources of TACs were identified within the planning area.

The proposed General Plan Update would include opportunities for new development and redevelopment on Pinole's primary commercial corridors. As a result, new development and/or redevelopment of various urban uses, including mixed and multiple family uses, would be predominantly located along the San Pablo Avenue, Pinole Valley Road, and Appian Way corridors. Given that future development of sensitive land uses could potentially occur within 500 feet of I-80, or may involve the operation of non-permitted sources of TACs/ $PM_{2.5}$, this impact would be considered **significant**.

Proposed General Plan Update Policies and Actions that Provide Mitigation

The proposed General Plan Update contains the following policies and actions that include specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

POLICY SE.7.1 Continue working with the Bay Area Air Quality Management District and other regional agencies to:

1. Improve air quality through pollution prevention methods.
2. Ensure enforcement of air emission standards.
3. Reduce local and regional traffic (the single largest source of air pollution in the city) and support public transit improvements.
4. Promote regional air pollution prevention plans for business and industry.
5. Promote strategies to reduce particulate pollution from residential fireplaces and wood-burning stoves.
6. Locate parking appropriately and provide adequate signage to reduce unnecessary "circling" and searching for parking.
7. Promote anti-idling policies and programs.

POLICY SE.7.9 Air quality will be maintained and improved by requiring project mitigation, such as Transportation Demand Management (TDM) techniques, where significant air quality impacts are identified.

POLICY LU.3.3 Require design review of commercial and industrial projects to ensure compatibility with adjacent or nearby land uses, including intensity, access, internal circulation, visual characteristics, noise, odors, fire hazards, vibrations, smoke, discharge of wastes and nighttime lighting.

Mitigation Measures

- The proposed General Plan Update shall include an action item that would require the City to create overlay zones for major stationary and mobile sources of emissions. At a minimum, overlay zones should be established 500 feet on each side of I-80. Future planned development of sensitive land uses (e.g., residential, convalescent care facilities, schools, etc.) within overlay zones should be required to evaluate potential health risks resulting from exposure to toxic air contaminants. Evaluation of potential risks should be conducted in accordance with BAAQMD recommended methodologies. Implementation of BAAQMD-recommended mitigation measures would be required for significant impacts.

- The proposed General Plan Update shall include an action item that would require the City shall periodically review and amend overlay zones, as deemed necessary, to reflect development of any new major stationary sources of toxic air contaminants.

Implementation of the above proposed General Plan Update policies and actions would require implementation of mitigation measures to reduce short-term and long-term air quality impacts and would ensure enforcement of air emission standards through continued coordination with the BAAQMD. The proposed mitigation measures would require the City to establish a special overlay zone for major sources of TACs located within the City, which would include an overlay zone extending to a minimum of 500 feet on each side of I-80. Development of future sensitive land uses within overlay zones would be required to evaluate potential health risks in accordance with BAAQMD-recommended methodologies. Implementation of the proposed policies, actions, and mitigation measures would reduce potential health-related risks associated with future development. However, even with mitigation, it may not be possible to reduce potential emissions of TACS and all health-related risks to nearby receptors to levels below the BAAQMD thresholds. As a result, this impact would be considered **significant and unavoidable**.

Create Objectionable Odors Affecting a Substantial Number of People

Impact 6 Subsequent land use activities associated with implementation of the proposed General Plan Update could include sources that could create objectionable odors affecting a substantial number of people or expose new residents to existing sources of odor. Thus, this impact is considered to be **significant**.

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

To assist local jurisdictions in the evaluation of odor-related impacts, the BAAQMD has developed screening levels for project-level evaluations where sensitive receptors would be

located near various types of odor sources. For general plans, the BAAQMD recommends that the plan: 1) identify special overlay zones around existing and planned sources of odors, and 2) identify goals, policies, and objectives to minimize potential impacts and create overlay zones for sources of odors and receptors (BAAQMD 2010(a)).

Major sources of potential odors identified by the BAAQMD include wastewater treatment plants, wastewater pumping facilities, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical and fiberglass manufacturing, painting/coating operations, food processing facilities, and green waste and recycling operations. Major odor sources located within the City of Pinole include the Hercules/Pinole Wastewater Treatment Plant, which is located adjacent to San Pablo Bay at the end of Tennant Avenue. Additional sources of potential odors within the City include various automotive body repair shops.

The proposed General Plan Update would include opportunities for new development and redevelopment on Pinole's primary commercial corridors. As a result, new development and/or redevelopment of various urban uses, including mixed and multiple family uses, would be predominantly located along the San Pablo Avenue, Pinole Valley Road, and Appian Way corridors. Given that future development of sensitive land uses could potentially occur within close proximity to existing or future odorous emission sources, this impact would be considered **significant**.

Proposed General Plan Update Policies and Actions that Provide Mitigation

The proposed General Plan Update contains the following policies and actions that include specific, enforceable requirements and/or restrictions and corresponding performance standards that address this impact.

POLICY SE.7.1 Continue working with the Bay Area Air Quality Management District and other regional agencies to:

1. Improve air quality through pollution prevention methods.
2. Ensure enforcement of air emission standards.
3. Reduce local and regional traffic (the single largest source of air pollution in the city) and support public transit improvements.
4. Promote regional air pollution prevention plans for business and industry.
5. Promote strategies to reduce particulate pollution from residential fireplaces and wood-burning stoves.
6. Locate parking appropriately and provide adequate signage to reduce unnecessary "circling" and searching for parking.
7. Promote anti-idling policies and programs.

POLICY SE.7.9 Air quality will be maintained and improved by requiring project mitigation, such as Transportation Demand Management (TDM) techniques, where significant air quality impacts are identified.

POLICY LU.3.3 Require design review of commercial and industrial projects to ensure compatibility with adjacent or nearby land uses, including intensity, access, internal circulation, visual characteristics, noise, odors, fire hazards, vibrations, smoke, discharge of wastes and nighttime lighting.

Mitigation Measures

The City of Pinole is largely developed and projected future growth is anticipated to consist of a mix of land uses, consisting of predominantly commercial and residential land uses located along major transportation corridors. Development of major odor emission sources would not be anticipated with implementation of the proposed General Plan Update. However, exposure to

existing sources of odors, such as the Hercules/Pinole Wastewater Treatment Plant, could potentially occur. Implementation of the above proposed General Plan Update policies would require review of proposed development projects and implementation of mitigation measures to reduce potential odor impacts. The City of Pinole will also continue to work with the BAAQMD to improve local air quality for community residents. However, even with mitigation, it may not be possible to reduce odor impacts to all receptors to less-than-significant levels. As a result, this impact would be considered **significant and unavoidable**.

CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The policies and actions in the proposed General Plan Update would provide direction for growth within the City limits, while the General Plan policies and actions of neighboring jurisdictions and the Contra Costa County provides direction for growth outside the City limits. Similar relationships between cities and counties occur throughout the SFBAAB. Thus, the setting for this cumulative analysis consists of the SFBAAB and associated growth and development anticipated in the SFBAAB.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Result in a Cumulatively Considerable Net Increase of Nonattainment Criteria Pollutants and Precursors

Impact 7 Implementation of the proposed General Plan Update, in combination with cumulative development in the SFBAAB, would result in a cumulatively considerable net increase of ozone, course and fine particulate matter. This is considered a **cumulatively considerable** impact.

As noted in Impact 1, the proposed General Plan Update would result in increased VMT that would increase at a greater rate than projected population growth and, therefore, would be inconsistent with the BAAQMD Clean Air Plan. The Draft 2020 General Plan includes extensive goals, policies and actions that would reduce emissions from area and mobile sources. However, the projected population and VMT could still exceed the underlying assumptions used for air planning and attainment efforts. As a result, future development associated with the proposed General Plan Update may interfere with future attainment and/or maintenance of ambient air quality standards.

Proposed General Plan Policies that Provide Mitigation

The discussion under Impact 1 identifies those policy provisions that contain specific, enforceable requirements and/or restrictions and corresponding performance standards to directly address air quality.

Mitigation Measures

Implementation of the proposed General Plan Update policies and actions would assist in reducing the proposed General Plan Update's contribution to cumulative air quality impacts; however, this contribution is still considered **cumulatively considerable** and thus a **significant and unavoidable** impact. There are no feasible mitigation measures that can completely offset air pollutant emissions from subsequent development under the proposed General Plan Update.

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name:

Project Name: Pinole GPU - Area Source, 2030 Baseline

Project Location: Contra Costa County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	4.74	6.16	4.52	0.00	0.01	0.01

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	4.74	6.16	4.52	0.00	0.01	0.01

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	0.46	6.15	3.96	0.00	0.01	0.01
Hearth						
Landscape	0.04	0.01	0.56	0.00	0.00	0.00
Consumer Products						
Architectural Coatings	4.24					
TOTALS (tons/year, unmitigated)	4.74	6.16	4.52	0.00	0.01	0.01

Area Source Changes to Defaults

Percent residential using natural gas changed from 60% to 100%

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Users\KURT\AppData\Roaming\Urbemis\Version9a\Projects\Pinole GPU Area Source Future.urb924

Project Name: Pinole GPU - Area Source, 2030 Project

Project Location: Contra Costa County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	7.35	10.01	6.73	0.00	0.02	0.02

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	7.35	10.01	6.73	0.00	0.02	0.02

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	0.75	10.00	6.17	0.00	0.02	0.02
Hearth						
Landscape	0.04	0.01	0.56	0.00	0.00	0.00
Consumer Products						
Architectural Coatings	6.56					
TOTALS (tons/year, unmitigated)	7.35	10.01	6.73	0.00	0.02	0.02

Area Source Changes to Defaults

Percent residential using natural gas changed from 60% to 100%

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Users\KURT\AppData\Roaming\Urbemis\Version9a\Projects\Pinole GPU Mobile.urb924

Project Name: Pinole General Plan Update-Mobile Emissions, 2030 Baseline

Project Location: Contra Costa County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	108.63	162.96	1,427.66	1.26	235.86	45.14

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	108.63	162.96	1,427.66	1.26	235.86	45.14

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Pinole GPU-2030 Baseline	108.63	162.96	1,427.66	1.26	235.86	45.14
TOTALS (tons/year, unmitigated)	108.63	162.96	1,427.66	1.26	235.86	45.14

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2011 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Pinole GPU-2030 Baseline		81,679.00	1000 sq ft	1.00	81,679.00	751,446.78
					81,679.00	751,446.78

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.9	1.0	98.6	0.4
Light Truck < 3750 lbs	13.2	1.5	94.7	3.8
Light Truck 3751-5750 lbs	20.4	0.5	99.5	0.0
Med Truck 5751-8500 lbs	7.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.1	0.0	72.7	27.3
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med-Heavy Truck 14,001-33,000 lbs	0.7	0.0	14.3	85.7
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.7	62.2	37.8	0.0
School Bus	0.4	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.2	9.2	9.2	9.2	9.2	9.2
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Pinole GPU-2030 Baseline				0.0	0.0	100.0

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Users\KURT\AppData\Roaming\Urbemis\Version9a\Projects\Pinole GPU Mobile 2030Project.urb924

Project Name: Pinole General Plan Update-Mobile Emissions, 2030 Project

Project Location: Contra Costa County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	120.00	180.03	1,577.19	1.39	260.56	49.87

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (tons/year, unmitigated)	120.00	180.03	1,577.19	1.39	260.56	49.87

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Pinole GPU-2030 Baseline	120.00	180.03	1,577.19	1.39	260.56	49.87
TOTALS (tons/year, unmitigated)	120.00	180.03	1,577.19	1.39	260.56	49.87

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2011 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Pinole GPU-2030 Baseline		90,234.00	1000 sq ft	1.00	90,234.00	830,152.78
					90,234.00	830,152.78

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.9	1.0	98.6	0.4
Light Truck < 3750 lbs	13.2	1.5	94.7	3.8
Light Truck 3751-5750 lbs	20.4	0.5	99.5	0.0
Med Truck 5751-8500 lbs	7.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.1	0.0	72.7	27.3
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med-Heavy Truck 14,001-33,000 lbs	0.7	0.0	14.3	85.7
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.7	62.2	37.8	0.0
School Bus	0.4	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.2	9.2	9.2	9.2	9.2	9.2
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Pinole GPU-2030 Baseline				0.0	0.0	100.0