3.1 Air Quality

This section examines the air quality in the region of the proposed project, including a summary of applicable air quality regulations and potential air quality impacts associated with the proposed project. The reader is also referred to Section 3.2, Climate Change and Greenhouse Gases, for a discussion on climate change and associated environmental effects. This section is based on an analysis of project-related operational air quality impacts prepared by Air Permitting Specialists (2014) and an analysis of project-related construction air quality impacts by Ambient Air Quality & Noise Consulting (2013).

3.1.1 EXISTING SETTING

The proposed project is located in Pittsburg in eastern Contra Costa County, within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The 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 County, and the southwestern portion of Solano County. 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.

REGIONAL CLIMATE, TOPOGRAPHY, AND AIR POLLUTION POTENTIAL

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

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 typically keeps storms from affecting the California coast. Hence, the SFBAAB experiences little precipitation in the summer months. Winds tend to blow onshore from the north/northwest during this time.

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.

Generally in the winter, the Pacific high pressure system 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 periodically becomes dominant, bringing strong inversions, light winds, and high pollution potential.

Topography

The complex terrain of the SFBAAB, particularly in the higher elevations, distorts the normal wind flow patterns in the air basin. The greatest distortion occurs 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 summertime (BAAQMD 2010a).

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 2010a).

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 2010a).

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 on 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 2010a).

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 in the SFBAAB (BAAQMD 2010a).

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 35º Fahrenheit (F) cooler than temperatures 15 to 20 miles inland. At night, this contrast usually decreases to less than 10ºF (BAAQMD 2010a).

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 temperature variation is large (BAAQMD 2010a).

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 2010a).

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 occur during the winter where mixing and ventilation are low and pollutant levels build up (BAAQMD 2010a).

Air Pollution Potential

The potential for high pollutant concentrations developing at a given location depends on 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 2010a).

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 air basin's 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 2010a).

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 2010a).

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 (BAAQMD 2010a).

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 buildup 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 (164 to 328 feet), 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 2010a).

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 2010a).

LOCAL ATMOSPHERIC CONDITIONS

Although air pollution potential is strongly influenced by climate and topography, the air pollution that occurs in a location also depends on 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. The 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 2010a).

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 2010a).

Carquinez Strait Subregion

Within the SFBAAB, there are eleven major climatological subregions (BAAQMD 2010a). Pittsburg, and thus the proposed project area, is located in the Carquinez Strait subregion. It is the only sea-level gap between the Bay and the Central Valley. The Carquinez Strait subregion includes the lowlands bordering the strait to the north and south, and includes the area adjoining the Suisun Bay and the western part of the Sacramento-San Joaquin Delta as far east as Bethel Island. The subregion extends from Rodeo in the southwest and Vallejo in the northwest to Fairfield on the northeast and Brentwood on the southeast.

Prevailing winds are from the west in the Carquinez Strait. During the summer and fall months, high pressure offshore coupled with low pressure in the Central Valley causes marine air to flow eastward through the Carquinez Strait. The wind is strongest in the afternoon. Afternoon wind speeds of 15 to 20 miles per hour (mph) are common throughout the Carquinez Strait subregion. Annual average wind speeds are 8 mph in Martinez and 9 to 10 mph farther east. Sometimes atmospheric conditions cause air to flow from the east. East winds usually contain more pollutants than the cleaner marine air from the west. In the summer and fall months, this can cause elevated pollutant levels to move into the central SFBAAB through the strait. These high pressure periods are usually accompanied by low wind speeds, shallow mixing depths, higher temperatures, and little or no rainfall.

Summer mean maximum temperatures reach about 90ºF in the subregion. Mean minimum temperatures in the winter are in the high 30s. Temperature extremes are especially pronounced in sheltered areas farther from the moderating effects of the strait itself. Many industrial facilities with significant air pollutant emissions—e.g., chemical plants and refineries—are located within the Carquinez Strait subregion. The pollution potential of this area is often moderated by high wind speeds. However, upsets at industrial facilities can lead to short-term pollution episodes, and emissions of unpleasant odors may occur at any time. Receptors downwind of these facilities could suffer more long-term exposure to air contaminants than individuals elsewhere. Areas of the subregion that are traversed by major roadways, such as Interstate 80, may also be subject to higher local concentrations of carbon monoxide and particulate matter, as well as certain toxic air contaminants, such as benzene (BAAQMD 2010a).

AMBIENT AIR QUALITY STANDARDS

Both the US Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) established ambient air quality standards for common air pollutants. These ambient air quality standards are levels of contaminants that represent safe levels intended to avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called “criteria” pollutants because the health and other effects of each pollutant are described in criteria documents. The 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 coarse particulate matter (PM_{10}). The federal and California state ambient air quality standards and BAAQMD attainment status are summarized in **Table 3.1-1**.

CURRENT 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 have been violated in recent decades for NO_2, sulfur dioxide, sulfates, lead, hydrogen sulfide, or vinyl chloride.

TABLE 3.1-1
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 N	— 0.075 ppm	— N
Carbon Monoxide (CO)	1-Hour 8-Hour	20 ppm 9.0 ppm	A	35 ppm 9.0 ppm	A
Nitrogen Dioxide (NO_2)	Annual Average 1-Hour	0.03 ppm 0.18 ppm	— A	0.053 ppm 0.1 ppm	A U
Sulfur Dioxide (SO_2)	24-Hour Annual 1-Hour	0.04 ppm — 0.25 ppm	A — A	0.14 ppm 0.030 ppm 0.075 ppm	A A A
Respirable Particulate Matter (PM_{10})	Annual Average 24-Hour	20 $\mu g/m^3$ 50 $\mu g/m^3$	N N	– 150 $\mu g/m^3$	— U
Fine Particulate Matter ($PM_{2.5}$)	Annual Average 24-Hour	12 $\mu g/m^3$ —	N —	12 $\mu g/m^3$ 35 $\mu g/m^3$	A N
Lead	30-day Average Calendar Quarter Rolling 3-Month	1.5 $\mu g/m^3$ — —	A — —	— 1.5 $\mu g/m^3$ 0.15 $\mu g/m^3$	— A U/A
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	N/A		
Visibility-Reducing Particulate Matter	8-hour	Extinction coefficient of 0.23 per kilometer–visibility of 10 miles or more	U		

Source: BAAQMD 2012a

Notes: ppm = parts per million, µg/m3 = micrograms per cubic meter. N = nonattainment; A = attainment; U = unclassified; N/A = no information available

The nearest ambient air quality monitoring station to the proposed project site is the Concord-2975 Treat Boulevard monitoring station, located to the west of the project site. **Table 3.1-2** summarizes historical occurrences of pollutant levels for this monitoring station, based on the last three years of available data (i.e., 2011–2013). 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, federal and state ozone standards have been exceeded on multiple days over the last three years. No exceedances of the federal PM_{10} standards were measured during the years 2011 to 2013; however, the state standard for PM_{10} was exceeded an estimated six days in 2011. Federal $PM_{2.5}$ standards were exceeded an estimated two days in 2011 and one day in 2013. There have been no days during which measured concentrations of carbon monoxide or NO_2 exceeded federal or state ambient air quality standards during the last three years of available data.

TABLE 3.1-2
AMBIENT AIR QUALITY MONITORING DATA

Pollutant Standards	2011	2012	2013
Ozone			
Max 1-hour concentration (ppm)	0.099	0.093	0.074
Max 8-hour concentration (ppm) (state/federal)	0.079/0.078	0.086/0.085	0.062/0.062
Number of days above state/federal 1-hr standard	2/0	0/0	0/0
Number of days above state/federal 8-hour standard	5/2	3/2	0/0
Respirable Particulate Matter (PM_{10})			
Max 24-hour concentration (μg/m3) (state/federal)	58.8/55.9	35.4/33.7	50.5/47.6
Number of days above state standard (measured/estimated)	1/6	0/0	1/0
Number of days above federal standard (measured/estimated)	0/0	0/0	0/0
Fine Particulate Matter ($PM_{2.5}$)			
Max 24-hour concentration (μg/m3)	47.5	32.2	36.2
Number of days above federal standard (measured/estimated)	2/2	0/0	1/1
Carbon Monoxide (CO)			
Max 1-hr/8-hr concentration (ppm)	1.6/1.24	1.2/0.82	N/A
Number of days above state/federal 8-hour standards	0/0	0/0	N/A
Number of days above state/federal 1-hour standard	0/0	0/0	N/A
Nitrogen Dioxide (NO_2)			
Max 1-Hour concentration (ppm)	42.4	39.6	44.6
Number of days above state standard	0	0	0

Source: CARB 2014; USEPA 2014

Based on ambient monitoring data obtained from the Concord-2975 Treat Boulevard monitoring station.

AIR POLLUTANTS OF CONCERN AND HEALTH EFFECTS

The most problematic pollutants in the region 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 (O_3), 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 reactive organic gases (ROG) and nitrogen oxide (NO_X) in the presence of sunlight. The main sources of ROG and NO_X, 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. NO_X emissions exhibit a different curve; emissions decrease as the vehicle approaches 30 mph and then begin to increase with increasing speeds (BAAQMD 2010a).

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, ozone 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, as well as materials such as rubber and fabrics (BAAQMD 2010a).

Particulate Matter

Particulate matter (PM) can be divided into different 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 woodstoves 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 2010a).

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 emissions 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 ozone, 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, and pulp and paper mills. The major adverse health effects associated with exposure to SO_2 pertain to the upper respiratory tract. SO_2 is a respiratory irritant with constriction of the bronchioles occurring with inhalation of SO_2 at 5 parts per million (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 noncarcinogenic 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. Noncarcinogenic 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.

Diesel Exhaust

Diesel exhaust is a TAC of growing concern in California. According to the *California Almanac of Emissions and Air Quality* (CARB 2009), 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 (diesel particulate matter, or DPM). In 1998, CARB identified DPM as a toxic air contaminant. DPM differs from other toxic air contaminants 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 DPM 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 toxic air contaminants in the San Francisco Bay Area Air Basin (BAAQMD 2010a).

Unlike criteria pollutants, there are no ambient air quality standards for TACs because no safe levels of TACs can be determined. 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 of California and the 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 (such as Interstate 80)
- High volume arterials and local roadways with a high level of diesel traffic

Land Use Compatibility with TAC Emission Sources

CARB published an informational guide entitled *Air Quality and Land Use Handbook: A Community Health Perspective* 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 CARB 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." For informational purposes, it should be noted that the recommendations of the handbook are advisory and need to be balanced with other state and local policies (CARB 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. CARB-recommended separation distances for various sources of emissions are summarized in **Table 3.1-3**.

TABLE 3.1-3
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 1 mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	Avoid siting new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or CARB on the status of pending analyses of health 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 three 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.

Source: CARB 2005

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 CARB's Diesel Risk Reduction Plan.

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, which CARB identified as a TAC in 1986, is located in many parts of California and is commonly associated with ultramafic rock. The project site has been previously developed and 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.

From January 1, 2008, to present, no confirmed odor complaints have been filed with the BAAQMD for the existing Mt. Diablo Recycling Center and Transfer Station. The BAAQMD received one unconfirmed complaint on July 1, 2009, for which the BAAQMD was unable to confirm the source of the odor complaint. No unconfirmed or confirmed odor complaints for the existing facility have been received since 2009 (BAAQMD 2012c, 2014).

NEARBY LAND USES AND SENSITIVE RECEPTORS

Existing land uses in the vicinity of the project site consist predominantly of industrial uses and vacant land. The nearest sensitive land uses are residential dwellings, the nearest of which are located approximately one-half mile west of the project site. In addition, Martin Luther King Jr. Junior High School and the Martin Luther King Children's Center are located approximately one-half mile southwest of the project site, adjacent to and south of El Pueblo Avenue. A proposed residential development project (Sunnyside Estates) would be located approximately 1,700 feet from the southwestern boundary of the existing project site.

3.1.2 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 Pittsburg, are discussed below, along with their individual responsibilities.

FEDERAL

US Environmental Protection Agency

The USEPA is responsible for enforcing the federal Clean Air Act (CAA) and the 1990 amendments to it (CAAA) and the national ambient air quality standards (federal standards) that the USEPA 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 are O_3, CO, NO_2, SO_2, PM_{10}, and lead. The USEPA also has regulatory and enforcement jurisdiction over emissions 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, the USEPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan that demonstrates the means to attain the federal standards. The State Implementation Plan 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 federal CAAA requires the USEPA to promulgate national emissions standards for hazardous air pollutants (NESHAPs). The NESHAPs may differ for major sources than for area sources of hazardous air pollutants (HAPs). (Major sources are defined as stationary sources with potential to emit more than 10 tons per year (TPY) of any HAP or more than 25 TPY of any combination of HAPs; all other sources are considered area sources.) The emissions standards are to be promulgated in two phases. In the first phase (1992–2000), the USEPA developed technology-based emissions standards designed to produce the maximum emissions reduction achievable. These standards are generally referred to as requiring maximum achievable control technologies (MACT). For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), the USEPA was required to promulgate health risk-based emissions standards, where deemed necessary, to address risks remaining after implementation of the technology-based NESHAP standards. The CAAA required the USEPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum, to benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 required the use of reformulated gasoline in selected US cities (those with the most severe ozone nonattainment conditions) to further reduce mobile-source emissions (BAAQMD 2010a).

STATE

California Air Resources Board

CARB, 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 regulating emissions from motor vehicles and consumer products within the state. CARB has established emissions 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 (Assembly Bill [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 CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and adopted the USEPA's list of hazardous air pollutants as TACs. Most recently, diesel exhaust particulate was added to the CARB list of TACs. Once a TAC is identified, CARB then adopts an Airborne Toxics Control Measure for sources that emit that particular contaminant. 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 toxic best available control technology to minimize emissions. None of the TACs identified by CARB have a safe threshold.

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

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

CARB 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, CARB adopted a new public transit bus fleet rule and emissions standards for new urban buses. These new rules and standards provide for (1) more stringent emissions 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. Milestones include the low sulfur diesel fuel requirement and tighter emissions 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 fewer 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 CARB's Risk Reduction Plan, it is expected that diesel PM concentrations will be reduced by 75 percent in 2010 and 85 percent 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 2010a).

Senate Bill 656

In 2003, the California Legislature enacted Senate Bill (SB) 656 to reduce public exposure to PM_{10} and $PM_{2.5}$. CARB 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 San Francisco Bay Area Air Basin through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The BAAQMD clean air strategy 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 CAA, CAAA, and CCAA. The BAAQMD also limits emissions and public exposure to emissions, including toxic air contaminants, through a number of programs, rules, and regulations. BAAQMD regulations applicable to the proposed project may include, but are not limited to, the following:

- **Regulation 2 – Permits**: Specifies the requirements for issuance of authorities to construct and permits to operate for stationary emission sources. Includes requirements for the review of new emissions sources, including sources of toxic air contaminants.
- **Regulation 6 – Particulate Matter**: Limits the quantity of particulate matter in the atmosphere by controlling emissions rates, concentration, visible emissions, and opacity.
- **Regulation 7 – Odorous Substances**: Establishes general limitations on odorous substances and specific emission limitations on certain odorous compounds.
- **Regulation 8 – Organic Compounds**: Limits the emission of organic pollutants from permitted stationary sources.
- **Regulation 9 – Inorganic Gaseous Pollutants**: Limits inorganic gaseous pollutants from permitted stationary sources.
- **Regulation 10 – Standards of Performance for New Stationary Sources**: Establishes emission and/or performance standards for permitted stationary sources.
- **Regulation 11 – Hazardous Pollutants**: Sets emission and/or performance standards for hazardous pollutants, including emissions of asbestos. 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.

Bay Area 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 for the national ozone standard and clean air plans 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 *Bay Area 2010 Clean Air Plan* to address nonattainment of the national 1-hour ozone standard in the SFBAAB, as well as nonattainment of the California ambient air quality standards. The purpose of the *Bay Area 2010 Clean Air Plan* is to (BAAQMD 2010a):

- 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 time frame.

City of Pittsburg General Plan

The City adopted its current General Plan in 2001. **Appendix F** provides those General Plan policies relevant to air quality and to the proposed project as well as a preliminary evaluation of the project's consistency with these policies. While this DEIR discusses the project's consistency with the General Plan pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15125(d), the appropriate reviewing authority will ultimately make the determination of the project's consistency with the General Plan.

3.1.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

Per Appendix G of the State CEQA Guidelines and the BAAQMD recommendations, air quality impacts are considered significant if implementation of the proposed project would:

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

As stated in CEQA 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. On June 2, 2010, the BAAQMD's board of directors unanimously adopted thresholds of significance to assist local jurisdictions during the review of projects that are subject to CEQA. These thresholds of significance were designed to establish the level at which the BAAQMD believed air pollution emissions associated with proposed projects that are subject to CEQA would cause significant environmental impacts to human health and welfare. The BAAQMD's justification for the adopted thresholds of significance was incorporated into Appendix D of the BAAQMD's (2010a) updated *California Environmental Quality Act Air Quality Guidelines*.

On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds. The court did not determine whether the thresholds were valid on the merits, but found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them until the BAAQMD had complied with CEQA. The BAAQMD appealed the Alameda County Superior Court's decision. The Court of Appeal of the State of California, First Appellate District, reversed the trial court's decision. The Court of Appeal's decision was appealed to the California Supreme Court, which granted limited review, and the matter is currently pending further review.

In light of the pending litigation, BAAQMD is no longer recommending that the 2010 significance thresholds be used as a generally applicable measure of a project's significant air quality impacts. Lead agencies will therefore need to determine appropriate air quality thresholds of significance based on substantial evidence in the record. The 2010 significance thresholds are based on substantial evidence, as identified in Appendix D of the BAAQMD's (2010a) *California Environmental Quality Act Air Quality Guidelines*. Given that the trial court's judgment does not pertain to the scientific soundness of the 2010 significance thresholds and given that these thresholds are supported by substantial evidence, as provided by the BAAQMD in Appendix D of the Air Quality Guidelines, these thresholds are used in this DEIR for the evaluation of air quality impacts, as noted below (BAAQMD 2010a, 2012b).

Criteria Air Pollutants and Precursors

Short-Term Construction Emissions

Construction-generated emissions exceeding 54 pounds per day (lbs/day) of ROG, NO_x, and/or $PM_{2.5}$ (exhaust) and 82 lbs/day of PM_{10} (exhaust) would be considered to have a potentially significant impact. Short-term increases of criteria air pollutants in excess of these thresholds would also be considered to have a potentially significant conflict with implementation of the BAAQMD's (2010b) *Bay Area 2010 Clean Air Plan*. Emissions of fugitive dust (PM_{10}/$PM_{2.5}$) would be considered potentially significant if BAAQMD-recommended best management practices for the control of construction-generated emissions have not been incorporated as part of the proposed project.

Long-Term Operational Emissions

Operational emissions exceeding 54 lbs/day of ROG, NO_x, and/or $PM_{2.5}$ (exhaust) and 82 lbs/day of PM_{10} (exhaust) would be considered to have a potentially significant impact. Annual emissions exceeding 10 tons/year of ROG, NO_x, and/or $PM_{2.5}$ (exhaust) and 15 tons/year of PM_{10} (exhaust) would also be considered to have a potentially significant impact. Long-term increases of criteria air pollutants in excess of these thresholds would also be considered to have a potentially significant conflict with implementation of the BAAQMD's *Bay Area 2010 Clean Air Plan*.

Localized Carbon Monoxide Concentrations

The proposed project would be considered to have a potentially significant impact if the project would contribute to localized CO concentrations that would exceed California ambient air quality standards of 9.0 ppm (8-hour average) or 20.0 ppm (1-hour average).

Risks and Hazards

The proposed project would be considered to have a potentially significant impact if the project would contribute to localized concentrations of TACs at sensitive receptors that would result in an increased cancer risk greater than 10 per million persons or a non-cancer risk that exceeds a Hazard Index of 1.0. Increases in cumulative risk would be considered potentially significant if increased cancer risk would exceed 100 per million or if non-cancer risk would exceed a Hazard Index of 10.0.

Odors

Odors would be considered potentially significant if the project would create objectionable odors affecting a substantial number of people or contribute to conditions where an existing source of odors has resulted in five or more complaints per year averaged over a three-year period.

METHODOLOGY

The assessment of air quality impacts was conducted in accordance with BAAQMD-recommended methodologies and includes evaluation of short-term construction and long-term operational emissions. The methodologies used for evaluation of short-term construction and long-term operational emissions are discussed below.

Short-Term Construction Emissions

Construction activities associated with the proposed project are described in **Table 3.1-4**. Because the site is largely developed, construction of the new proposed facilities is not anticipated to require extensive site preparation. The remaining activities would consist of interior tenant improvements and installation of new equipment inside or on the exterior of the existing buildings, which would require minimal use of off-road equipment, such as a forklift for material handling and a concrete saw.

Emissions associated with short-term construction activities were quantified by Ambient Air Quality & Noise Consulting using the California Emissions Estimator Model (CalEEMod), version 2013.2.2. Emissions modeling was conducted for each of the primary construction phases based on default parameters contained in the model for the BAAQMD region and on construction data and activity schedule durations identified for the proposed project. Construction modeling assumptions are summarized in **Table 3.1-4** and included in **Appendix E**.

TABLE 3.1-4
SUMMARY OF CONSTRUCTION ACTIVITIES

Construction Activity	Activity Requirements/Duration
Truck Maintenance Facility and Yard and Parking and Commodity Storage Area	• Minor site preparation/grading required; however, to be conservative, site preparation and grading requirements were based on default parameters contained in CalEEMod • Construct an approximate 18,000-square-foot maintenance building • Install asphalt or other impervious surface over approximately 18.5 acres • Approximately 160 days overall construction period
Biomass Gasification Unit Installation and Concrete Pad	• No grading – subgrade compacted over the years • 100 foot x 40 foot x 6 inch concrete pad to be poured in less than one week; 9 truckloads of concrete • Flatbed trucks to deliver biomass unit and accessory equipment – 10 trucks over 4 weeks • Crane unit to assemble over 5 weeks • Electrical and mechanical contractors to wire over 4 weeks • 10 weeks for installation time
2nd Mixed C&D Facility Installation and Construction of Concrete Pad	• No grading – subgrade compacted over the years • 165 foot x 36 foot x 6 inch concrete pad to be poured in less than one week • 13 truckloads of concrete • Flatbed trucks to deliver processing equipment – 3 trucks over 1 week • Crane unit to assemble over 1 week • Electrical and mechanical contractors to wire over 2 weeks • 4 weeks for installation time
Installation of Commercial Processing Line Indoors	• Saw-cut current concrete pad inside Mt. Diablo Recycling Center • Flatbed trucks to deliver processing equipment – 6 trucks over 2 weeks • Crane unit to assemble over 2 weeks • Electrical and mechanical contractors to wire over 2 weeks • 4 weeks for installation time
Installation of Food Waste Processing Area Indoors	• Saw-cut current concrete pad inside Transfer/Processing Facility • Flatbed trucks to deliver processing equipment – 2 trucks over 1 week • Crane unit to assemble over 1 week • Electrical and mechanical contractors to wire over 2 weeks • 4 weeks for installation time
Installation of solar panels to rooftops	• Flatbed trucks to deliver units – 16 trucks over 2 weeks • Crane unit to assemble over 2 weeks • Electrical and mechanical contractors to wire over 4 weeks • 6 weeks for installation time

Source: Edgar & Associates, Inc. 2012, 2013

Notes: Construction emissions modeling was conducted for each of the construction phases based on the information provided by the project applicant, as noted above. Emissions modeling included the addition of a forklift for material handling activities for each of the proposed construction activities. Construction worker employee commute trips were based on default parameters contained in the CalEEMod computer program.

Long-Term Operational Emissions

Criteria Air Pollutants and Precursors

The proposed increase in the daily acceptance rate would lead to increased usage of equipment and an increase in vehicular traffic. The latter consists of increased traffic associated with employees/self-haul vehicles as well as an increase in the number of trucks that would transport the additional material to and from the facility. The changes in equipment use and mobile sources are summarized in **Tables 3.1-5** and **3.1-6**, respectively. In addition to on-site equipment and additional vehicle trips, the project includes a Biomass Gasification Unit that would generate up to 1 megawatt of electric power. The biogas would be combusted in an internal combustion engine and the engine would be connected to an electric generator. The engine would operate 24 hours per day, 365 days per year.

Emissions of criteria air pollutants and precursors were estimated using emission factors derived from existing documentation and various computer models, including the EMFAC2011, OFFROAD, and CalEEMod computer programs. Emissions were modeled for both existing and proposed project conditions for determination of overall net increases in daily and annual emissions. Emissions from mobile sources are based on average trip length, peak daily, and average annual vehicle miles traveled derived from the traffic analysis prepared for this project. On-road vehicle emissions were quantified based on emissions factors derived from the EMFAC2011 computer model. Emissions associated with the on-site operation of off-road equipment were based on operational data provided by the project applicant. Emissions associated with the proposed biogas unit are based on manufacturer data and permit data obtained from representative sources (APS 2014). Refer to **Appendix E** for additional modeling assumptions and results.

TABLE 3.1-5
SUMMARY OF MOTOR VEHICLE TRIPS

Activity	Vehicle Type	Operating Schedule	Round-Trip Length (miles)	Current Peak Daily Vehicles	Maximum Future Permitted Daily Vehicles	Net Increase in Daily Vehicles	Net Increase in Annual Vehicles
Employee Vehicles/Self-Haul	Light Duty	7 days/week 52 weeks/yr 365 days/yr	23	900	4,220	3,320	1,211,800
Collection Trucks	Heavy Duty	5 days/week 52 weeks/yr	17	180	840	660	171,600
Long-Haul Trucks	Heavy Duty	5 days/week 52 weeks/yr 260 days/yr	17	120	560	440	114,400

Source: APS 2014
Annual vehicles = vehicles/day x days/year

TABLE 3.1-6
LIST OF CURRENT AND FUTURE ON-SITE EQUIPMENT

Operational Activity/Equipment	Equipment Use Existing Conditions			Equipment Use Proposed Project Conditions		
	No. of Pieces	Hours per Day	Hours per Year	No.	Hours per Day	Hours per Year
Transfer Processing Facility						
Front-End Loaders	4	16	23,296	10	24	87,360
Excavators	1	4	1,456	2	16	11,648
Skip Loaders	1	4	1,456	1	4	1,456
Sweeper	2	6	4,368	2	10	7,280
Forklift	1	2	728	2	4	2,912
Recycling Center						
Front-End Loaders	1	16	4,160	2	16	11,648
Forklift	3	16	12,480	6	16	34,944
C & D Processing Area						
Front-End Loaders	1	4	832	2	8	5,824
Excavator	1	8	1,664	2	8	5,824
Organic Processing Area						
Front-End Loaders	2	8	4,160	2	16	11,648
Biomass Gasification Unit						
Loaders	—	—	—	1	16	5,824

Source: APS 2014

Toxic Air Contaminants

Emissions of TACs associated with short-term construction and long-term operation of the proposed project would be primarily associated with emissions of diesel particulate matter (DPM). Methodologies used for the evaluation of short-term construction and long-term operational exposure to TACs are discussed below.

Short-Term Construction Activities

The nearest existing sensitive receptors consist of residential dwellings, the nearest of which are located approximately 2,900 feet (approximately one-half mile) west of the project site, and Martin Luther King Jr. Junior High School, which is located approximately one-half mile southwest of the project site. The nearest anticipated sensitive receptors would be at Sunnyside Estates, a proposed subdivision that would be located approximately 1,700 feet from the southwestern corner of the project site. Given that no sensitive receptors are located within 1,000 feet of the project and construction of the proposed project would not require extensive site preparation activities, short-term health risks associated with project construction would be considered minimal and were qualitatively assessed.

Long-Term Operational Activities

Long-term operation-related exposure of sensitive receptors to emissions of TACs and associated health risks were quantitatively assessed by Air Permitting Specialists (2014). Based on the analysis conducted, the pollutant of primary concern associated with the long-term operation of the proposed project is DPM. The Biomass Gasification Unit will also release trace amounts of toxic air pollutants. The amounts of these pollutants and their toxicity are 10 to 100 times lower than DPM. Nonetheless, TAC emissions from the Biomass Gasification Unit were also included in the analysis. TAC emissions included in the analysis are summarized in **Table 3.1-7**. Emissions modeling was based on the same operational parameters discussed above for the evaluation of criteria air pollutants and precursors (APS 2014).

TABLE 3.1-7
SUMMARY OF TOXIC AIR CONTAMINANTS INCLUDED IN THE ANALYSIS

Diesel-Exhaust Particulate Matter
1,3-Butadiene
Acetaldehyde
Acrolein
Benzene
Carbon Tetrachloride
Chlorobenzene
Chloroform
Ethylbenzene
Formaldehyde
Methanol
Methylene Chloride
Napthalene
Styrene
Toluene
Vinyl Chloride
Xylene

Source: APS 2014

Dispersion modeling conducted as part of the health risk assessment prepared by APS was performed using the Hazard Assessment and Reporting Protocol (HARP) dispersion model, version 1.4d. Predicted health risks at nearby receptor locations were quantified based on a 70-year period of exposure, assuming an inhalation exposure pathway. The dispersion modeling was based on calculated 70-year average emission factors derived from the CalEEMod, OFFROAD, and EMFAC2011 computer models. For years extending beyond the limitations of these models (i.e., years 2063 to 2092), year 2040 emission factors were assumed (APS 2014).

Emissions from on-site equipment were modeled as an area source. Emissions from idling trucks were modeled as three separate point sources. The proposed Biomass Gasification Unit was modeled as a single point source. Meteorological data (hourly wind speed, wind direction, surface temperature) was based on year 2005 to 2008 data obtained in Pittsburg, provided by BAAQMD staff. A total of 3,382 receptors were modeled over a rectangular grid area of 3.4 kilometers. Discrete receptors were also located at the nearby Martin Luther King Jr. Junior High School. Age sensitivity factors were applied in accordance with BAAQMD-recommended methodology. The risk assessment included evaluation of cancer, chronic non-cancer, and acute health risks (APS 2014). It is important to note that the dispersion modeling and health risk assessment prepared by APS assumed that the proposed biomass plant and related activities would be located near the southern boundary of the project site. However, the biomass plant is currently proposed to be located near the northern boundary of the project site, approximately 0.3 miles farther from the nearest off-site sensitive receptors than included in the model. Because pollutant concentrations would diminish with increased distance from the source, the findings of the APS analysis would be considered conservative and actual concentrations/predicted health risks would likely be lower. Refer to **Appendix E** for additional modeling assumptions and results.

Localized Mobile-Source Carbon Monoxide Concentrations

The proposed project's contribution to localized mobile-source carbon monoxide concentrations was assessed using the BAAQMD's screening methodology. Based on BAAQMD guidance, projects meeting all of the following screening criteria would be considered to have a less than significant impact related to localized CO concentrations (BAAQMD 2010a):

- 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.
- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- 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).

Odors

Emissions of odors were qualitatively assessed in accordance with BAAQMD-recommended methodologies taking into account the history of odor complaints associated with the existing facility, the proximity of nearby receptors, and odor complaints from similar biomass power plants.

PROJECT IMPACTS AND MITIGATION MEASURES

Short-Term Construction Emissions of Criteria Air Pollutants and Precursors

Impact 3.1.1 Construction-related emissions of criteria air pollutants and precursors could violate or contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutant concentrations, and/or conflict with air quality planning efforts. This impact is considered to be **potentially significant**.

The proposed project will result in short-term emissions from construction activities. Construction-generated emissions are short term and of temporary duration, lasting only as long as construction activities occur, but have the potential to represent a significant air quality impact. 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. Emissions of airborne particulate matter are largely dependent on the amount of ground disturbance associated with site preparation activities. 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 the application of architectural coatings are typically the dominant sources of ROG emissions.

Estimated daily construction-generated emissions of ROG, NO_x, and particulate matter (PM_{10} and $PM_{2.5}$) associated with project construction are summarized in **Table 3.1-8**. Estimated maximum daily emissions are also included, which assumes that multiple construction-related activities could occur on the same day. Based on the modeling conducted, the highest daily emissions would likely occur during year 2015, which would include construction of the proposed concrete pad, food waste processing line improvements, solar panel installation, and construction of the proposed maintenance building and paved parking areas. Assuming that multiple activities could occur simultaneously on any given day, construction-generated emissions of ROG and NO_X could potentially exceed the significance threshold of 54 lbs/day. As a result, short-term emissions of ROG and NO_X would be considered to have a **potentially significant** impact. Maximum daily emissions of exhaust PM would not exceed applicable thresholds.

Although not proposed for implementation at this time, the hauling of waste via the adjacent rail line is being considered as a potential future option. It is conceivable that this option may require additional infrastructure improvements, which may result in short-term increases of criteria air pollutants and precursors. However, the type and extent of rail haul option improvements is not known at this time, so it would be speculative to provide construction related modeling for that option.

As noted previously, the Bay Area is currently designated nonattainment for the PM_{10} and $PM_{2.5}$ ambient air quality standards. As a result, the BAAQMD considers uncontrolled emissions of fugitive dust to also have a **potentially significant** impact.

TABLE 3.1-8
SHORT-TERM UNMITIGATED DAILY EMISSIONS OF CRITERIA AIR POLLUTANTS AND PRECURSORS

Construction Activity	Const. Year	Pounds per Day (lbs/day)							
		ROG	NO_x	PM_{10}			$PM_{2.5}$		
				Fug.	Exh.	Total	Fug.	Exh.	Total
Summer Conditions									
Biomass Gasification Unit Installation	2016	1.20	12.11	0.37	0.55	0.92	0.10	0.51	0.61
2nd Mixed C&D Facility Installation	2016	1.21	12.28	0.38	0.56	0.94	0.10	0.51	0.61
Concrete Pad Installation	2015	0.27	2.33	.28	.04	.32	.08	0.03	0.11
Commercial Processing Line Improvements	2014	2.11	18.73	.37	1.04	1.41	0.10	0.99	1.09
Food Waste Processing Line Improvements	2015	1.98	17.73	0.37	0.97	1.34	0.10	0.93	1.02
Solar Panel Installation	2015	1.28	12.88	0.38	0.59	0.96	0.10	0.54	0.64
Maintenance Building & Parking Lot Construction	2015	61.38	79.16	18.24	9.03	21.33	9.98	3.77	12.82
Maximum Daily Emissions – Year 2014(1)		*2.11*	*18.73*	*0.37*	*1.04*	*1.41*	*0.10*	*1.00*	*1.09*
Maximum Daily Emissions – Year 2015(1)		***64.91***	***112.10***	*19.26*	*10.63*	*23.95*	*10.25*	*5.27*	*14.59*
Maximum Daily Emissions – Year 2016(1)		*2.41*	*24.39*	*0.72*	*1.11*	*1.86*	*0.20*	*1.02*	*1.22*
Significance Threshold(2)		***54***	***54***	–	***82***	–	–	***54***	–
Exceeds Threshold?		***Yes***	***Yes***	–	*No*	–	–	*No*	–
Winter Conditions									
Biomass Gasification Unit Installation	2016	1.22	12.19	0.37	0.55	0.92	0.10	0.51	0.61
2nd Mixed C&D Facility Installation	2016	1.23	12.37	0.38	0.56	0.94	0.10	.51	.61
Concrete Pad Installation	2015	0.32	2.46	.28	0.04	0.32	0.08	0.03	0.11
Commercial Processing Line Improvements	2014	2.14	18.83	0.37	1.04	1.41	0.10	0.99	1.09

Construction Activity	Const. Year	Pounds per Day (lbs/day)							
		ROG	NO_x	PM_{10}			$PM_{2.5}$		
				Fug.	Exh.	Total	Fug.	Exh.	Total
Food Waste Processing Line Improvements	2015	2.00	17.81	0.37	0.97	1.34	0.10	0.93	1.02
Solar Panel Installation	2015	1.30	12.97	0.38	0.59	0.96	0.10	0.54	0.64
Maintenance Building & Parking Lot Construction	2015	61.80	79.18	18.24	4.04	21.33	9.98	3.90	12.82
Maximum Daily Emissions – Year 2014(1)		*2.14*	*18.83*	*0.37*	*1.04*	*1.41*	*0.10*	*0.99*	*1.09*
Maximum Daily Emissions – Year 2015(1)		***65.41***	***112.43***	*19.26*	*5.63*	*23.95*	*10.25*	*5.40*	*14.59*
Maximum Daily Emissions – Year 2016(1)		*2.45*	*24.56*	*0.75*	*1.11*	*1.86*	*0.20*	*1.02*	*1.22*
Significance Threshold(2)		***54***	***54***	–	***82***	–	–	***54***	–
Exceeds Threshold?		***Yes***	***Yes***	–	*No*	–	–	*No*	–

Source: Ambient Air Quality & Noise Consulting 2013

Fug = Fugitive; Exh = Exhaust

1. *Maximum daily emissions assumes some construction activities could potentially occur simultaneously. Totals may not sum due to rounding. Emissions exceeding the threshold are depicted in bold font.*
2. *The BAAQMD's recommended threshold for fugitive PM emissions is based on implementation of best management practices.*

Mitigation Measures

MM 3.1.1

a. The proposed project shall implement BAAQMD-recommended best management practices for the control of fugitive dust including, but not limited to, the following:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved areas of vehicle travel) shall be watered two times per day.

2. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

3. All vehicle speeds on on-site unpaved areas shall be limited to a maximum of 15 miles per hour.

4. All parking areas, equipment pads, and driveways shall be paved as soon as possible. Equipment pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

5. Where applicable, vegetative ground cover (fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible.

6. A publicly visible sign shall be posted at the site entrance identifying the telephone number and name of the person to contact at the construction site regarding dust complaints. The phone number of the City contact person and/or department shall also be posted to ensure compliance. All complaints, including any necessary corrective actions implemented to address the complaint, shall be documented and responded to within 48 hours. The designated City compliance monitoring staff and/or department shall be notified of all complaints received.

b. The following measures shall be implemented to reduce construction-generated mobile-source emissions:

1. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by Title 13, Section 2485 of the California Code of Regulations). Clear signage shall be provided for construction workers at all access points.

2. All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

3. Heavy-duty (i.e., 25 horsepower or greater) off-road construction equipment shall, at a minimum, meet Tier 3 emission standards.

c. To the extent possible, construction of the proposed maintenance building shall utilize pre-coated building materials and low-VOC-content architectural coatings.

Timing/Implementation: *Measures shall be added as conditions of approval for all development permits*

Enforcement/Monitoring: *City of Pittsburg Development Services Department*

With implementation of the above mitigation measures, maximum daily construction-related emissions of ROG would be reduced to approximately 58 lbs/day and NO_x would be reduced to approximately 61 lbs/day, or less. The proposed mitigation measure also includes best management practices for the control of fugitive dust emissions, as recommended by the BAAQMD. With mitigation, maximum daily emissions would still be projected to exceed the BAAQMD's significance threshold of 54 lbs/day for each pollutant. It is important to note that to ensure a conservative analysis, maximum daily emissions were calculated assuming that all facility improvements identified for a given year (excluding initial site preparation and grading activities) could potentially occur on the same day. Actual emissions would vary depending on the specific construction activities conducted. Nonetheless, given that detailed construction schedules for the proposed improvements are not yet available and because maximum daily emissions with mitigation would be projected to exceed BAAQMD's significance thresholds, this impact would be considered **significant and unavoidable**.

Long-Term Operational Emissions of Criteria Air Pollutants and Precursors

Impact 3.1.2 Long-term operational emissions of criteria air pollutants and precursors could violate or contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutant concentrations, and/or conflict with air quality planning efforts. This impact is considered to be **potentially significant**.

The proposed project consists of a proposed expansion of the existing facility, construction of the truck maintenance building, and installation of a proposed Biomass Gasification Unit. The proposed project would increase the permitted hours of operation to 24 hours per day. Overall net increases in emissions, in comparison to existing operations, would be primarily associated with the increased use of off-road equipment and on-road haul trucks, as well as the operation of the proposed Biomass Gasification Unit.

Net increases in daily operational emissions attributable to the proposed project are summarized in **Tables 3.1-9** and **3.1-10**, respectively. Overall net increases in operational emissions attributable to the proposed project are also presented.

TABLE 3.1-9
LONG-TERM UNMITIGATED DAILY EMISSIONS OF CRITERIA AIR POLLUTANTS AND PRECURSORS

Scenario	Maximum Daily Emissions (lbs/day)[1]			
	ROG	NO_X	PM_{10}	$PM_{2.5}$[2]
Existing Conditions				
Off-Road Equipment	9.5	68.0	4.2	4.2
On-Road Vehicles	1.8	12.1	0.4	0.4
Total	11.3	80.0	4.6	4.6
Proposed Project Conditions				
Off-Road Equipment	31.9	229.3	13.3	13.3
On-Road Vehicles [3]	6.9	47.7	1.8	1.8
Biomass Gasification Unit	2.0	6.1	0.9	0.9
Total	40.8	283.1	16.0	16.0
Net Increase	**29.5**	**203.1**	**11.4**	**11.4**
Significance Threshold	**54**	**54**	**82**	**54**
Exceeds Significance Threshold?	**No**	**Yes**	**No**	**No**

Source: APS 2014

1. *Maximum daily emissions from modeling outputs. Totals may not sum due to rounding.*
2. *Emissions of $PM_{2.5}$ conservatively assumes that emissions would be equivalent to PM_{10}.*
3. *On-road vehicle emissions for the proposed project are based on projected maximum permitted operating conditions derived from the traffic analysis prepared for this project (Fehr & Peers 2012).*
4. *Relocation of the existing maintenance building is not anticipated to result in increased vehicle trips or off-road/stationary equipment use. Increased emissions associated with changes in energy use would be negligible (i.e., 0.13 lbs/day/pollutant, or less).*

TABLE 3.1-10
LONG-TERM UNMITIGATED ANNUAL EMISSIONS OF CRITERIA AIR POLLUTANTS AND PRECURSORS

Scenario	Annual Emissions (tons/year)[1]			
	ROG	NO_X	PM_{10}	$PM_{2.5}$[2]
Existing Conditions				
Off-Road Equipment	1.6	11.3	0.7	0.7
On-Road Vehicles	0.2	1. 7	0.1	0.01
Total	1.8	11.3	0.8	0.8

Scenario	Annual Emissions (tons/year)[1]			
	ROG	NO_X	PM_{10}	$PM_{2.5}$[2]
Proposed Project Conditions				
Off-Road Equipment	6.0	42.2	2.8	2.8
On-Road Vehicles[3]	0.9	6.5	0.2	0.2
Biomass Gasification Unit	1.1	1.1	0.5	0.5
Total	8.0	49.8	3.5	3.5
Net Increase	**6.2**	**38.5**	**2.7**	**2.7**
Significance Threshold	**10**	**10**	**15**	**10**
Exceeds Significance Threshold?	**No**	**Yes**	**No**	**No**

Source: APS 2014

1. *Annual emissions are from modeling outputs. Totals may not sum due to rounding.*
2. *Emissions of $PM_{2.5}$ conservatively assumes that emissions would be equivalent to PM_{10}.*
3. *On-road vehicle emissions for the proposed project are based on projected maximum permitted operating conditions derived from the traffic analysis prepared for this project (Fehr & Peers 2012)*
4. *Relocation of the existing maintenance building is not anticipated to result in increased vehicle trips or off-road/stationary equipment use. Increased emissions associated with changes in energy use would be negligible (i.e., 0.13 lbs/day/pollutant, or less).*

As depicted, the proposed project would result in net increases in daily emissions of approximately 29.5 lbs/day of ROG, 203.1 lbs/day of NO_X, 11.4 lbs/day of PM_{10}, and 11.4 lbs/day of $PM_{2.5}$. Net increases of annual operational emissions would total approximately 6.2 tons/year of ROG, 38.5 tons/year of NO_X, 2.7 tons/year of PM_{10}, and 2.7 tons/year of $PM_{2.5}$. Net increases in daily and annual operational emissions for ROG, PM_{10}, and $PM_{2.5}$ would not exceed applicable significance thresholds. However, based on the modeling conducted, project-generated increases of NO_X would exceed the BAAQMD's significance thresholds of 54 lbs/day and 10 tons/year. As a result, net increases of NO_X would be considered to have a **potentially significant** impact.

Mitigation Measures

MM 3.1.2a The project applicant shall demonstrate that all heavy-duty off-road equipment (i.e., 25 hp or greater) used at the project site meets, at a minimum, CARB's Tier 4i emission standards.

Timing/Implementation: *Prior to operation of new facilities*

Enforcement/Monitoring: *City of Pittsburg Development Services Department and Department of Environmental Affairs*

MM 3.1.2b The operator shall provide a report on the throughput tonnage processed at the facility that would result in operational emissions of NO_X at 90 percent of the allowable threshold of 54 pounds per day and 10 tons per year (i.e., 48.6 pounds of NO_X per day or 9 tons of NO_X per year). The report shall be included as a condition of approval of the use permit and shall be completed by a qualified air quality professional within one year of approval of the use permit for the expansion. Project-generated tonnages and estimated emissions based on the report shall be evaluated commencing at the five-year state permit review and each year thereafter as tonnage reports are submitted to the City Department of Environmental Affairs and Development Services Department. Once the throughput tonnages reach the amount determined in the report to result in 48.6 pounds of NO_X daily or 9 or more tons of NO_X annually, the operator shall prepare and submit project-generated emissions reports, as described in mitigation measure MM 3.1.2c.

Timing/Implementation: *Completion of the report shall be a condition of approval of the use permit and shall be completed prior to issuance of the Solid Waste Facility Permit*

Enforcement/Monitoring: *City of Pittsburg Development Services Department and Department of Environmental Affairs*

MM 3.1.2c Once the project receives a tonnage throughput resulting in 90 percent of assumed NO_X emissions (48.6 pounds of NO_X per day or 9 tons of NO_X per year) as indicated by annual tonnage reports submitted to the City's Department of Environmental Affairs and Development Services Department, the operator shall obtain the services of a qualified specialist, approved by the City Development Services Department in conjunction with the Department of Environmental Affairs, to prepare and submit an annual air quality report showing project-generated NO_X emissions. The annual emissions evaluation shall identify project-generated increases in emissions over those existing at the time of the approval of the use permit, any emission reduction strategies that have been implemented (i.e., use of cleaner equipment, etc.), and any emissions offsets or additional mitigation measures, as described in mitigation measure MM 3.1.2d, that will be implemented sufficient to achieve the threshold of 54 pounds of NO_X per day or 10 tons of NO_X per year. Emissions analyses shall be submitted to the City by April 1 of the following year. Upon the City's approval of the annual air quality report, documentation of any emissions offsets or additional mitigation strategies that have been implemented shall be provided to the City within 30 calendar days.

Timing/Implementation: *Annually as described*

Enforcement/Monitoring: *City of Pittsburg Development Services Department and Department of Environmental Affairs*

MM 3.1.2d Based on the information provided in the annual report described in mitigation measure MM 3.1.2c, the proposed project shall implement on-site control measures and/or purchase emissions offsets sufficient to limit net increases (as defined) in operational NO_X emissions to no more than 54 pounds per day or 10 tons of NO_X per year. Measures shall be implemented on an ongoing basis corresponding to increases in operational activities. Measures to be implemented to reduce operational NO_X emissions may include, but are not limited to, the following:

- Use of alternatively fueled vehicles and off-road equipment.

- Electrification of on-site equipment.
- Reduction in the number of pieces of motorized equipment and/or hours of use.
- Replacement/conversion of existing off-road equipment sufficient to meet, at a minimum, CARB's Tier 4i emission standards, or equivalent.
- Secure emission reduction credits (ERCs) to offset NO_X emissions per BAAQMD Regulations 2-2-215, 302, and 303.

Timing/Implementation: *Annually as described*

Enforcement/Monitoring: *City of Pittsburg Development Services Department and Department of Environmental Affairs*

Mitigation measure **MM 3.1.2a** would require any new heavy-duty equipment used on-site to meet CARB's Tier 4i emissions standards or equivalent. In comparison to uncontrolled equipment, CARB's Tier 4i emission standards can reduce equipment NO_X emissions by approximately 95 percent, or more, depending on the type and size of the equipment (SCAQMD 2014). Assuming that all new off-road equipment would meet CARB's more stringent Tier 4i emissions standards, net increases in operational emissions would be reduced to approximately 75 lbs/day and approximately 12 tons/year.

Recognizing that the tonnage accepted at the site will ramp up over time, mitigation measures **MM 3.1.2b** through **MM 3.1.2d** require the project applicant prepare a report indicating the throughput tonnage processed at the facility and an annual air quality report and to implement those measures recommended by the annual air quality report or as conditions of the use permit to ensure that operational emissions do not exceed the significance threshold of 54 lbs/day. Assuming project operations were to occur 365 days per year, compliance with the daily significance threshold of 54 lbs/day would also ensure compliance with the annual threshold of 10 tons/year. With mitigation, this impact would be **less than significant**.

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

Impact 3.1.3 Implementation of the proposed project would not contribute to traffic volumes at primarily affected intersections that would exceed the BAAQMD's screening criteria. As a result, localized concentrations of mobile-source CO are not projected to exceed applicable ambient air quality standards. This is considered to be a **less than significant** impact.

Localized 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. However, 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."

Based on BAAQMD guidance, projects meeting all of the following screening criteria would be considered to have a less than significant impact to localized CO concentrations (BAAQMD 2010a):

- 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.
- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- 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).

Peak-hour traffic volumes for primarily affected intersections, under maximum permitted conditions, are summarized in **Table 3.1-11**. As depicted, peak hour intersection volumes at primarily affected intersections would range from a low of 1,893 vehicles per hour to a high of 5,471 vehicles per hour (Fehr & Peers 2012). Peak-hour traffic volumes would not contribute to intersections experiencing more than 44,000 vehicles per hour, nor would the project contribute to intersections where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

State Route 4 (SR 4) is identified in the Contra Costa Congestion Management Program (CMP) network. CMP legislation requires that level of service (LOS) standards be adopted for the designated CMP network roadways. For the segment of SR 4 located in the vicinity of Loveridge Road, the Contra Costa CMP establishes a peak-hour traffic standard of LOS F. Based on the traffic analysis prepared for this project, projected LOS at the SR4/Loveridge Road intersection with project implementation would be LOS D or better. Implementation of the proposed project would not conflict with the Contra Costa Congestion Management Program East County Action Plan. For these reasons, the proposed project's contribution to localized concentrations of mobile-source CO would be considered **less than significant**.

Mitigation Measures

None required.

TABLE 3.1-11
PEAK-HOUR TRAFFIC VOLUMES CUMULATIVE PLUS PROJECT

Intersection	Peak-Hour Traffic Volumes	
	AM	PM
East Leland Road and Loveridge Road	4,284	5,471
State Route 4 EB Off-Ramp and Loveridge Road	3,194	3,499
California Avenue and Loveridge Road	3,660	4,022
California Avenue and Shopping Center Drive	2,535	2,526
Pittsburg-Antioch Highway and Loveridge Road	3,141	3,037
Buchanan Road and Loveridge Road	2,111	2,593
Pittsburg-Antioch Highway and Auto Center Drive	1,893	2,793
BAAQMD Screening Criteria	***44,000***	***44,000***
Exceeds BAAQMD Screening Criteria?	***No***	***No***

Source: Fehr & Peers 2012

Based on projected maximum permitted operating conditions derived from the traffic analysis prepared for this project.

Exposure of Sensitive Receptors to Substantial Concentrations of Toxic Air Contaminants

Impact 3.1.4 Implementation of the proposed project would not result in incremental increases in risk or hazards at nearby sensitive receptors that would exceed applicable significance thresholds. With implementation of proposed mitigation, this is considered a **less than significant** impact.

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 are of particular concern. DPM consists of gaseous and particulate matter containing various TACs such as formaldehyde, benzene, and metals. Under CARB guidelines, DPM is used as a surrogate that characterizes the various components contained in the exhaust mixture. As noted earlier in this section, CARB identified DPM as a toxic air contaminant in 1998.

Health risks associated with TAC exposure are largely based on the dose to which receptors are exposed. Dose is dependent on both the concentration and the duration of exposure. The assessment of health-related risks associated with DPM exposure is typically based on a 70-year period of exposure.

As noted earlier in this section, the proposed project is not anticipated to require extensive site preparation. As a result, extensive use of off-road diesel-fueled vehicles would not be required for the project. In addition, the use of diesel-powered off-road equipment would be temporary and of short duration, with individual construction activities occurring over an estimated 1- to 10-week period. Furthermore, given that the nearest sensitive receptors are located roughly one-half mile from the project site and given the high dispersion characteristics of DPM, construction of the proposed improvements would not be expected to create conditions where the probability of contracting cancer is greater than 10 in 1 million for nearby receptors. As a result, health impacts associated with short-term exposure to construction-generated TACs would be considered **less than significant**.

Long-Term Exposure

As noted earlier in this section, evaluation of the proposed project's contribution to localized concentrations of TACs and associated health risks was conducted by Air Permitting Specialists (2014). The principal toxic air contaminant associated with the long-term operation of the proposed project is DPM attributable to the operation of off-road equipment and, to a lesser extent, on-road mobile sources. In addition to DPM, there would be trace amounts of organic emissions associated with the gasifier. The amounts and toxicity of these emissions are 10 to 100 times lower than DPM.

Based on the modeling conducted, the existing maximally impacted receptor (MIR) would occur at residential land uses located west of the project site, approximately 2,900 feet from the project site. Based on the modeling conducted, the predicted cancer risk at the MIR would be 10.8 cancers per million. The 70-year cancer risk would exceed the BAAQMD threshold of significance of 10 cancers per million. The predicted chronic and acute hazard index at the MIR would be less than 0.01 and 0.08, respectively, which would not exceed the hazard index of 1. Predicted $PM_{2.5}$ concentrations at the MIR would be 0.02 $\mu g/m^3$ and would not exceed the significance threshold of 0.3 $\mu g/m^3$.

In addition, a residential rezoning (Sunnyside Estates) has been approved for a development north of SR 4, adjacent to and east of Clarion Court (approximately 2,100 feet from the project site). Based on the modeling conducted, the predicted cancer risk at this land use would be less than 10 cancers per million. The 70-year cancer risk would not exceed the BAAQMD threshold of significance of 10 cancers per million. Likewise, predicted chronic and acute hazard indices, as well as predicted $PM_{2.5}$ concentration, would not exceed applicable thresholds at this approved residential land use.

Given that the predicted incremental increase in cancer risk at the existing MIR would exceed applicable thresholds, this impact would be considered **potentially significant**. As previously noted, the modeling assumed that the proposed biomass plant and related activities would be located near the southern boundary of the project site, as previously proposed. However, as currently proposed, the biomass plant would be located near the northern boundary of the project site, approximately 0.3 miles farther from the nearest off-site sensitive receptors. Because pollutant concentrations would diminish with increased distance from the source, the findings of this analysis would be considered conservative and actual concentrations/predicted health risks would likely be lower. Refer to **Appendix E** for additional modeling assumptions and results.

Mitigation Measures

Implement mitigation measure **MM 3.1.2a.**

Mitigation measure **MM 3.1.2a** requires any new heavy-duty off-road equipment (i.e., 25 hp, or greater) to meet, at a minimum, CARB's Tier 4i emission standards. In comparison to uncontrolled equipment, the use of Tier 4i–compliant equipment can reduce PM emissions from on-site equipment by approximately 95 percent, or more, depending on the type and size of the equipment being used (SCAQMD 2014). With implementation of the mitigation measure, incremental increases in cancer risk at the MIR would be reduced to less than 1 in one million, below the BAAQMD's threshold of significance of 10 in one million. With mitigation, this impact is considered **less than significant**.

Create Objectionable Odors Affecting a Substantial Number of People

Impact 3.1.5 Subsequent land use activities associated with implementation of the proposed project would not create objectionable odors affecting a substantial number of people due to compliance with an Odor Impact Minimization Plan submitted with the proposed land use application. Thus, this impact is considered to be **less than significant.**

The occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. While offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and regulatory agencies.

The proposed project would result in increased waste processing rates, which would require increased on-site retention of organic waste materials. Organic waste materials may be a source of odors, particularly when stored in exterior areas under anaerobic conditions. It is important to note that biomass power plants are not identified as a major odor source by the BAAQMD.

To minimize potential odor impacts associated with the proposed increase in processing rates, the proposed project would operate under the parameters of an Odor Impact Minimization

Plan, which was prepared for the proposed project to minimize odor emissions and prevent nuisances in the surrounding area. The Odor Impact Minimization Plan includes various changes to existing on-site operations including but not limiting the outdoor storage of waste materials to 48 hours, and storage of only co-collected food material from residential sources in outdoor areas. No commercial food waste would be stored in outdoor areas. The plan identifies potential sensitive receptors in the area and establishes odor monitoring and complaint response protocols. The plan also provides design and operational considerations and procedures to minimize odor emissions associated with the proposed project. These include proper drainage to prevent standing water, screening of incoming loads to eliminate unacceptable waste materials, strict enforcement of storage time limits, monitoring of stockpiles to ensure optimal conditions, and worker education/awareness training. The plan also includes a contingency plan to control odors should they occur. Furthermore, the proposed project would be subject to BAAQMD Regulation 7, Odorous Substances, which limits the discharge of odorous substances that may result in nuisance impacts to nearby receptors. For these reasons and given that the nearest off-site receptors are located approximately one-half mile from the project site, this impact would be considered **less than significant**.

Mitigation Measures

None required.

3.1.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The setting for the cumulative air quality analysis consists of the San Francisco Bay Area Air Basin.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulatively Considerable Net Increase of Nonattainment Criteria Pollutants and Precursors

Impact 3.1.6 The proposed project, in combination with emission sources in the San Francisco Bay Area Air Basin, would result in a cumulatively considerable net increase of criteria air pollutants and precursors. With implementation of proposed mitigation measures, this impact would be considered **less than cumulatively considerable.**

As shown in **Table 3.1-1**, the SFBAAB is in nonattainment status for O_3, PM_{10}, and $PM_{2.5}$. Therefore, continued generation of these pollutants at levels that exceed thresholds would contribute to exceedances in a nonattainment area. This would be considered a significant cumulative impact. As noted in Impact 3.1.3, the proposed project would not contribute to localized concentrations of mobile-source CO that, when combined with background concentrations from cumulative sources in the area, would be anticipated to exceed applicable ambient air quality standards. However, as identified in Impact 3.1.1 and Impact 3.1.2, the proposed project would result in increased short-term construction and long-term operational emissions of NO_X in excess of project-level significance thresholds, as well as short-term emissions of fugitive dust. Because significance thresholds are designed to achieve attainment for these pollutants in the SFBAAB, net increases in unmitigated project-generated emissions could interfere with corresponding regional air quality planning efforts. For this reason, the proposed project's contribution to cumulative regional air quality impacts would be considered **cumulatively considerable**.

Mitigation Measures

Implementation of mitigation measures **MM 3.1.1** and **MM 3.1.2a** through **MM 3.1.2d** would reduce short-term construction and long-term operational emissions of NO_X to below applicable significance thresholds. Because the proposed project would not exceed significance thresholds with mitigation, the proposed project would not result in a net increase of NO_X or fugitive dust that would interfere with regional air quality planning efforts. With mitigation, this impact would be considered **less than cumulatively considerable**.

Cumulatively Considerable Contribution to Localized Concentrations of Toxic Air Contaminants

Impact 3.1.7 The proposed project, in combination with nearby emission sources, would not result in predicted risks or hazards that would exceed applicable significance thresholds at nearby sensitive receptors. With implementation of proposed mitigation, this is considered a **less than cumulatively considerable** impact.

Cumulative risk impacts attributable to the proposed project, in combination with existing sources, were evaluated in the air quality assessment prepared by APS for this project (2014). In accordance with BAAQMD-recommended methodologies, the assessment of cumulative impacts included existing sources within 1,000 feet of the project site. Individual hazards and risks were then summed to identify the cumulative cancer risks and hazards at the maximally impacted receptor (MIR).

The health modeling conducted for the project focused on exposure to DPM (diesel particulate matter) released from on-site equipment and idling trucks based on a 70-year exposure to determine averaged residential cancer risk. Based on the modeling conducted, the predicted cumulative cancer risk at the existing MIR would be 102 cancers per million. The predicted 70-year cancer risk at the existing MIR, as well as at the proposed residential land uses located north of SR 4 adjacent to and east of Clarion Court, would be projected to exceed the BAAQMD cumulative significance threshold of 100 cancers per million. The predicted chronic hazard index at the existing MIR would be 0.13 and the predicted acute hazard index would be 0.03, which would not exceed the cumulative chronic or acute hazard index of 10. Predicted $PM_{2.5}$ concentrations at the existing MIR would be 3.64 $\mu g/m^3$, which would exceed the cumulative significance threshold of 0.8 $\mu g/m^3$ (APS 2014). These levels would also be representative of predicted concentrations at the proposed residential land uses located adjacent to Clarion Court. Given that the predicted cumulative cancer risk and $PM_{2.5}$ concentrations would exceed applicable thresholds, the proposed project's cumulative contribution to localized emissions of TACs and associated risk impacts would be considered **cumulatively considerable**. Refer to **Appendix E** for additional modeling assumptions and results.

Mitigation Measures

Mitigation measure **MM 3.1.2a** requires any new heavy-duty off-road equipment (i.e., 25 hp, or greater) to be used at the project site to meet, at a minimum, CARB's Tier 4i emission standards. In comparison to uncontrolled equipment, the use of Tier 4i–compliant equipment can reduce PM emissions from on-site equipment by 95 percent or more. With implementation of the proposed mitigation measure, off-site cancer risk at the MIR would be reduced to below the BAAQMD's threshold of significance of 100 in one million. Predicted increases in ambient $PM_{2.5}$ concentrations would be reduced to approximately 0.01 $\mu g/m^3$, below the cumulative significance threshold of 0.8 $\mu g/m^3$ and the project's incremental risk at the nearest residential area due to ambient PM2.5 increase would be 0.01 (APS 2014). With mitigation, the project's contribution to this impact is considered **less than cumulatively considerable**.

Cumulatively Considerable Contribution to Localized Concentrations of Odorous Emissions

Impact 3.1.8 Implementation of the proposed project would not result in a cumulatively considerable increase of odorous emissions that would adversely impact nearby sensitive receptors. This is considered a **less than cumulatively considerable** impact.

There are no major sources of odorous emissions have been identified in the project area that would combine with potential odors from the project site. In addition, as noted in Impact 3.1.5, the proposed project would not result in significant increases in odors that would adversely affect a substantial number of people. As a result, the proposed project's cumulative contribution to localized concentrations of odors would be considered **less than cumulatively considerable**.

Mitigation Measures

None required.

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