## 9 AIR QUALITY

This section describes the study area's existing air quality conditions and applicable air quality regulations, and analyzes potential short-term and long-term air quality impacts that could result from implementation of the project.

## 9.1 ENVIRONMENTAL SETTING

The project site is located in a portion of eastern Placer County that is also part of the Mountain Counties Air Basin (MCAB). The MCAB comprises portions of Placer County, Plumas, Sierra, Nevada, portions of El Dorado County, Amador, Calaveras, Tuolumne, and Mariposa counties. Some vehicle activity (e.g., biomass hauling, employee commute trips) and biomass chipping associated with operation of the proposed power plant would also occur in the Lake Tahoe Air Basin (LTAB), including other portions of Placer and El Dorado Counties.

The ambient concentrations of air pollutant emissions are determined by the amount of pollutants emitted and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as climate, meteorology, and topography, in addition to the level of emissions by existing air pollutant sources. These factors are discussed separately below.

## 9.1.1 CLIMATE, METEOROLOGY, AND TOPOGRAPHY

The MCAB includes the central and northern Sierra Nevada Mountains. Elevations range from several hundred feet in the foothills to over 10,000 feet above mean sea level along the Sierra crest.

The county generally experiences warm, dry summers and wet winters. During the summer, in the western portion of the MCAB, temperatures that often exceed 100 degrees Fahrenheit (°F) coupled with clear sky conditions are favorable for ozone formation. Local climatology of the project site is best represented by measurements at the Squaw Valley Lodge and Truckee Airport stations. Maximum temperatures occur during July and reach 80°F on average. Minimum temperatures can be as low at 15°F during winter months (WRCC 2012a). Average annual precipitation of approximately 51 inches (247 inches of snowfall) occurs primarily during the months of November through March (WRCC 2012a). Average annual wind speed is approximately four miles per hour from the south (WRCC 2012b).

## 9.1.2 CRITERIA AIR POLLUTANTS

Concentrations of ozone, carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), respirable particulate matter ( $PM_{10}$ ), fine particulate matter ( $PM_{2.5}$ ), and lead are used as indicators of ambient air quality conditions. Because these are the most prevalent air pollutants known to be deleterious to human health and extensive health-effects criteria documents are available, they are commonly referred to as "criteria air pollutants."

A brief description of each criteria air pollutant—source types, health effects, and future trends—is provided below along with a description of the most current emissions inventory, attainment area designations, and monitoring data for the project area.

Table 9-1 Sources and Health Effects of Criteria Air Pollutants							
Pollutant	Sources	Acute <sup>1</sup> Health Effects	Chronic <sup>2</sup> Health Effects				
Ozone	Secondary pollutant resulting from reaction of ROG and NO <sub>X</sub> in presence of sunlight. ROG emissions result from incomplete combustion and evaporation of chemical solvents and fuels; NO <sub>X</sub> results from the combustion of fuels	Increased respiration and pulmonary resistance; cough, pain, shortness of breath, lung inflammation	Permeability of respiratory epithelia, possibility of permanent lung impairment				
Carbon monoxide (CO)	Incomplete combustion of fuels; motor vehicle exhaust	headache, dizziness, fatigue, nausea, vomiting, death	permanent heart and brain damage				
Nitrogen dioxide (NO <sub>2</sub> )	combustion devices; e.g., boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines	coughing, difficulty breathing, vomiting, headache, eye irritation, chemical pneumonitis or pulmonary edema; breathing abnormalities, cough, cyanosis, chest pain, rapid heartbeat, death	chronic bronchitis, decreased lung function				
Sulfur dioxide (SO <sub>2</sub> )	coal and oil combustion, steel mills, refineries, and pulp and paper mills	Irritation of upper respiratory tract, increased asthma symptoms	Insufficient evidence linking SO <sub>2</sub> exposure to chronic health impacts				
Respirable particulate matter (PM <sub>10</sub> ), Fine particulate matter (PM <sub>2.5</sub> )	fugitive dust, soot, smoke, mobile and stationary sources, construction, fires and natural windblown dust, and formation in the atmosphere by condensation and/or transformation of SO <sub>2</sub> and ROG	breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, premature death	alterations to the immune system, carcinogenesis				
Lead	metal processing	reproductive/developmental effects (fetuses and children)	numerous effects including neurological, endocrine, and cardiovascular effects				

Notes:  $NO_X$  = oxides of nitrogen; ROG = reactive organic gases.

Sources: EPA 2011.

#### **OZONE**

Ozone is a photochemical oxidant (a substance whose oxygen combines chemically with another substance in the presence of sunlight) and the primary component of smog. Most ground-level ozone is not directly emitted into the air but is formed through complex chemical reactions between precursor emissions of reactive organic gases (ROG) and oxides of nitrogen ( $NO_X$ ) in the presence of sunlight. ROG is a subset of volatile organic compounds and ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents used primarily in coating and adhesive processes, as well as evaporation of fuels. ROG is also continually released biogenically in large quantities from plant and trees.  $NO_X$  are a group of gaseous compounds of nitrogen and oxygen that result from the combustion of fuels.

Emissions of the ozone precursors ROG and  $NO_X$  have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. During the last 20 years the maximum amount of

 $<sup>^{1}</sup>$  Acute refers to effects of short-term exposures to criteria air pollutants, usually at fairly high concentrations.

<sup>&</sup>lt;sup>2</sup> Chronic refers to effects of long-term exposures to criteria air pollutants, usually at lower, ambient concentrations.

ROG and  $NO_X$  over an 8-hour period decreased by 17%. However, the ozone problem in Placer County still ranks among the most severe in the state (ARB 2009).

#### NITROGEN DIOXIDE

 $NO_2$  is a brownish, highly reactive gas that is most present in 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. Combustion 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  $NO_X$  and are reported as equivalent  $NO_2$ . Because  $NO_2$  is formed and depleted by reactions associated with photochemical smog (ozone), the  $NO_2$  concentration in a particular geographical area may not be representative of the local sources of  $NO_X$  emissions (EPA 2012).

#### PARTICULATE MATTER

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as  $PM_{10}$ .  $PM_{10}$  consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by reaction of gaseous precursors (ARB 2009). Fine particulate matter ( $PM_{2.5}$ ) includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less.

#### 9.1.3 MONITORING STATION DATA AND ATTAINMENT AREA DESIGNATIONS

Concentrations of criteria air pollutants are measured at several monitoring stations in the MCAB. The Truckee-Fire Station, located approximately three miles to the north, is the closest monitoring station to the project site with recent data for ozone and  $PM_{2.5}$ . The next nearest monitoring station with recent data for  $PM_{10}$  is the South Lake Tahoe-Sandy Way station, which is located approximately 26 miles to the south. PCAPCD recently set up monitoring stations in Kings Beach and in Tahoe City for ozone and  $PM_{2.5}$  but data from these stations are not yet considered to be of sufficient quality to determine regulatory compliance. In general, the measurements of ambient air quality from the monitoring stations at Truckee and South Lake Tahoe are representative of the air quality in the vicinity of the project area. Table 9-2 summarizes the air quality data from these stations for the past two years, 2010–2011.

The U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (ARB) use this type of monitoring data to designate areas according to attainment status for criteria air pollutants established by the agencies. The purpose of these designations is to identify those areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are "nonattainment," "attainment," and "unclassified." "Unclassified" is used in areas that cannot be classified on the basis of available information as meeting or not meeting the standards. The current national and State attainment designations for the Placer County portion of the MCAB are shown in Table 9-3 for each criteria air pollutant.

Note that although the Truckee monitoring station indicates that the local Truckee area is in attainment for ozone, the MCAB is classified as non-attainment for ozone as a result of ozone levels measured at other monitoring stations throughout the MCAB.

Table 9-2 Summary of Annual Air Quality Data (2010–2011)								
	2010	2011						
Ozone <sup>1</sup>								
Maximum concentration (1-hour/8-hour, ppm)	0.065/0.053	0.058/0.053						
Number of days State standard exceeded (1-hour/8-hour)	0/0	0/0						
Number of days national standard exceeded (1-hour/8-hour)	0/0	0/0						
Fine Particulate Matter (PM <sub>2.5</sub> ) <sup>1</sup>								
Maximum Concentration (24-hour average, μg/m³)	68.9	52.8						
Number of days national standard exceeded (measured <sup>3</sup> )	0	0						
Fine Particulate Matter (PM <sub>10</sub> ) <sup>2</sup>								
Maximum Concentration (24-hour average, μg/m³)	71.4	55.8						
Number of days national standard exceeded (measured <sup>3</sup> )	2	3						

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

Sources: ARB 2012a

Table 9-3 Attainment Status Designations for the Placer County Portion of the Mountain Counties Air Basin							
Pollutant National Designation State Designation							
Ozone	Nonattainment	Nonattainment					
$PM_{10}$	Unclassified	Nonattainment					
PM <sub>2.5</sub>	Attainment/Unclassified	Unclassified					
со	Attainment/Unclassified	Unclassified					
NO <sub>2</sub>	Attainment/Unclassified	Attainment					
SO <sub>2</sub>	Unclassified	Attainment					
Lead (Particulate)	Attainment/Unclassified	Attainment					
Hydrogen Sulfide	_	Unclassified					
Sulfates	_	Attainment					
Visibility Reducing Particulates	_	Unclassified					

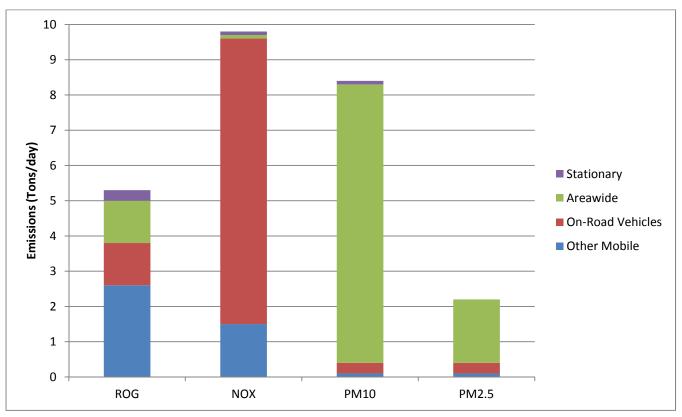
<sup>&</sup>lt;sup>1</sup> Data provided from the Truckee-Fire Station monitoring station.

<sup>&</sup>lt;sup>2</sup> Data provided from the South Lake Tahoe-Sandy Way monitoring station.

Measured days are those days that an actual measurement was greater than the level of the State daily standard or the national daily standard. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

#### 9.1.4 EMISSIONS INVENTORY

Exhibit 9-1 summarizes emissions of criteria air pollutants and precursors within the MCAB portion of Placer County for various source categories. According to Placer County's emissions inventory, mobile sources are the largest contributor to the estimated annual average for air pollutant levels of ROG and  $NO_X$  accounting for approximately 72% and 98% respectively, of the total emissions. Areawide sources account for approximately 94% and 82% of the County's  $PM_{10}$  and  $PM_{2.5}$  emissions, respectively (ARB 2008).



Source: ARB 2008.

Exhibit 9-1

Mountain Counties Air Basin Portion of Placer County 2008 Emissions Inventory

### 9.1.5 TOXIC AIR CONTAMINANTS

Concentrations of toxic air contaminants (TACs) are also used to indicate the quality of ambient air. A TAC is an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in trace quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

According to the *California Almanac of Emissions and Air Quality* (ARB 2009), the majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being diesel PM. Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emissions control system is being used. Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, ARB has made preliminary concentration estimates based on a PM exposure method. This method uses the ARB emissions inventory's  $PM_{10}$  database, ambient  $PM_{10}$  monitoring data, and the results from several studies to estimate

concentrations of diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1, 3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

Major sources of TACs in the vicinity of the project site include major highways and roadways, associated with the presence of diesel PM emissions from vehicle exhaust. State Route 89 (SR 89) is located to the east of the project site and Interstate 80 (I-80) is located to the north of the project site.

#### 9.1.6 NATURALLY OCCURRING 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 was identified as a TAC by ARB in 1986, is located in many parts of California and is commonly associated with serpentine soils and rocks.

According to two reports by the California Department of Conservation, Division of Mines and Geology Relative Likelihood for the Presence of Naturally Occurring Asbestos in Placer County, California and A General Location Guide to Ultramafic Rocks in California—Areas More Likely to Contain Naturally Occurring Asbestos (Higgins and Clinkenbeard 2006: 54, Churchill and Hill 2000), the study area is not likely to contain naturally occurring asbestos.

## 9.1.7 ODORS

Odors are generally 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 very 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; an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is 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.

The proposed project is not considered a major source of odors. The Eastern Regional MRF and Transfer Station, located adjacent to the project site, is considered a land use sometimes associated with odor complaints.

## 9.1.8 SENSITIVE LAND USES

Sensitive land uses are generally considered to include those uses where exposure to pollutants could result in health-related risks to individuals. Residential dwellings and places where people recreate or conjugate for extended periods of time such as parks or schools are of primary concern because of the potential for increased and prolonged exposure of individuals to pollutants.

Existing sensitive land uses in the vicinity of the project primarily include single-family residences. Two residences (occupied by the facility caretakers) are located on the Eastern Regional MRF and Transfer Station site. The two-acre project site includes one of the residences, which would be removed as part of the project. The other residences would remain. The closest onsite residence is located approximately 775 feet to the northwest of the project site. The closest offsite residences are approximately 1,500 feet to the east, across SR 89 and on the west side of the Truckee River. There are no other sensitive land uses located in close proximity to the project.

## 9.2 REGULATORY SETTING

Air quality within the Placer County portion of the MCAB is regulated by the EPA, ARB, and Placer County Air Pollution Control District (PCAPCD). Air quality within the LTAB is also regulated by the Tahoe Regional Planning Agency (TRPA). Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, State and local regulations may be more stringent.

#### **9.2.1 FEDERAL**

EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the Federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments to the CAA were made by Congress were in 1990.

#### CRITERIA AIR POLLUTANTS

The CAA required EPA to establish national ambient air quality standards (NAAQS). As shown in Table 9-4, EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, CO,  $NO_2$ ,  $SO_2$ , respirable and fine particulate matter ( $PM_{10}$  and  $PM_{2.5}$ ), and lead. The primary standards protect the public health and the secondary standards protect public welfare. The CAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The Federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments, and whether implementation will achieve air quality goals. If EPA determines a SIP to be inadequate, a federal implementation plan that imposes additional control measures may be prepared for the nonattainment area. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be applied to transportation funding and stationary air pollution sources in the air basin.

	Table 9-4 Ambient	: Air Quality Standards a	and Designations			
D. II	Averaging	O Provident	National <sup>c</sup>			
Pollutant	Time	California <sup>a,b</sup> –	Primary b,d	Secondary b,e		
Ozone	1-hour	0.09 ppm (180 μg/m³)	_e	Same as primary		
	8-hour	0.070 ppm (137 μg/m³)	0.075 ppm (147 μg/m³)	standard		
Carbon monoxide (CO)	1-hour	20 ppm (23 mg/m <sup>3</sup> )	35 ppm (40 mg/m³)	Same as primary		
	8-hour	6 ppm <sup>f</sup> (7 mg/m³)	9 ppm (10 mg/m³)	standard		
Nitrogen dioxide (NO <sub>2</sub> ) <sup>g</sup>	Annual arithmetic mean	0.030 ppm (57 μg/m³)	53 ppb (100 μg/m³)	Same as primary standard		
	1-hour	0.18 ppm (339 μg/m³)	100 ppb (188 μg/m³)	-		
Sulfur dioxide (SO <sub>2</sub> )	24-hour	0.04 ppm (105 μg/m³)	-	-		
	3-hour	-	-	0.5 ppm (1300 μg/m³)		
	1-hour	0.25 ppm (655 μg/m³)	75 ppb (196 μg/m³)	-		
Respirable particulate matter (PM <sub>10</sub> )	Annual arithmetic mean 24-hour	20 μg/m³ 50 μg/m³	– 150 μg/m³	Same as primary standard		
Fine particulate matter (PM <sub>2.5</sub> )	Annual arithmetic mean 24-hour	12 μg/m³ –	15.0 μg/m³ 35 μg/m³	Same as primary standard		
Lead <sup>g</sup>	Calendar quarter	-	1.5 μg/m <sup>3</sup>	Same as primary standard		
	30-Day average	$1.5  \mu g/m^3$	_	-		
	Rolling 3-Month Average	-	$0.15  \mu g/m^3$	Same as primary standard		
Hydrogen sulfide	1-hour	0.03 ppm (42 μg/m³)				
Sulfates	24-hour	25 μg/m <sup>3</sup>	No national			
Vinyl chloride <sup>f</sup>	24-hour	0.01 ppm (26 μg/m <sup>3</sup> )		cional ndards		
Visibility-reducing particulate matter	8-hour		Stai	iuui us		

Notes: µg/m³ = micrograms per cubic meter; km = kilometers; ppb = parts per billion; ppm = parts per million.

Source: ARB 2012b

<sup>&</sup>lt;sup>a</sup> California standards for ozone, SO<sub>2</sub> (1- and 24-hour), NO<sub>2</sub>, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

<sup>&</sup>lt;sup>b</sup> Concentration expressed first in units in which it was issued. Equivalent units given in parentheses are based on a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM<sub>10</sub> 24-hour standard is attained when 99 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The PM<sub>2.5</sub> 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the U.S. Environmental Protection Agency for further clarification and current Federal policies.

d National primary standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

National secondary standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant

<sup>&</sup>lt;sup>f</sup> The California Air Resources Board has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

## TOXIC AIR CONTAMINANTS/HAZARDOUS AIR POLLUTANTS

Air quality regulations also focus on TACs, or in Federal parlance hazardous air pollutants (HAPs). In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts may not be expected to occur. (By contrast, for the criteria air pollutants, acceptable levels of exposure can be determined and the ambient standards have been established [Table 9-4].) Instead, EPA and, in California, ARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum available control technology or best available control technology for toxics to limit emissions. (See the discussion of TACs in the "State" section below for a description of ARB's efforts.) These in conjunction with additional rules set forth by PCAPCD, described below under "Placer County Air Pollution Control District," establish the regulatory framework for TACs.

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

The CAAA also required EPA to issue vehicle or fuel standards containing reasonable requirements that control toxic emissions of, at a minimum, 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 areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

#### 9.2.2 STATE

ARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required ARB to establish California ambient air quality standards (CAAQS) (Table 9-4).

#### CRITERIA AIR POLLUTANTS

ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the state endeavor to achieve and maintain the CAAQS by the earliest date practical. The act specifies that local air districts should focus particular attention on reducing the emissions from transportation and areawide emission sources, and provides districts with the authority to regulate indirect sources.

Among ARB's other responsibilities are overseeing local air district compliance with Federal and State laws, approving local air quality plans, submitting SIPs to EPA, monitoring air quality, determining and updating area

designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

#### TOXIC AIR CONTAMINANTS

TACs in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807, Chapter 1047, Statutes of 1983) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588, Chapter 1252, Statutes of 1987). AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. Research, public participation, and scientific peer review are required before ARB can designate a substance as a TAC. To date, ARB has identified more than 21 TACs and adopted EPA's list of HAPs as TACs. Most recently, diesel PM was added to ARB's list of TACs.

Once a TAC is identified, ARB then adopts an airborne toxics control measure for sources that emit that particular TAC. If a safe threshold exists for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If no safe threshold exists, the measure must incorporate best available control technology for toxics to minimize emissions.

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare an inventory of toxic emissions, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

ARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). In February 2000, ARB adopted a new public-transit bus fleet rule and emissions standards for new urban buses. These rules and standards included more stringent emission standards for some new urban bus engines, beginning with the 2002 model year; zero-emission-bus demonstration and purchase requirements for transit agencies; and reporting requirements, under which transit agencies must demonstrate compliance with the public-transit bus fleet rule. Recent milestones included the low-sulfur diesel fuel requirement, and tighter emissions standards for heavy-duty diesel trucks (effective in 2007 and subsequent model years) and off-road diesel equipment (2011) nationwide. Over time, replacing older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) in California have been reduced significantly over the last decade; such emissions will be reduced further through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated-gasoline regulations) and control technologies.

With implementation of ARB's risk reduction plan, it is expected that concentrations of diesel PM 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.

## 9.2.3 LOCAL

#### PLACER COUNTY AIR POLLUTION CONTROL DISTRICT

#### **CRITERIA AIR POLLUTANTS**

PCAPCD attains and maintains air quality conditions in Placer County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean-air strategy of PCAPCD includes preparing plans for the attainment of ambient air quality standards, adopting and enforcing rules and regulations concerning sources of air pollution, and issuing permits for stationary sources of air pollution. PCAPCD 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.

All projects are subject to adopted PCACPD rules and regulations in effect at the time of construction. Specific rules applicable to the construction of the project may include but are not limited to the following:

- Rule 202—Visible Emissions. Requires that opacity emissions from any emission source not exceed 20% for more than 3 minutes in any one hour.
- Rule 217—Cutback and Emulsified Asphalt Paving Materials. Prohibits the use of the following asphalt materials for road paving: rapid cure cutback asphalt; slow cure cutback asphalt; medium cure cutback asphalt; or emulsified asphalt.
- Rule 218—Application of Architectural Coatings. Requires architectural coatings to meet various volatile organic compound (VOC) content limits.
- Rule 228—Fugitive Dust.
  - Visible emissions are not allowed beyond the project boundary line.
  - Visible emissions may not have opacity of greater than 40% at any time.
  - Track-out must be minimized from paved public roadways.
- Rule 231—Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters. Establishes limits for NO<sub>x</sub> and CO for certain types of boilers. This rule is not applicable to the project or project alternatives.
- Rule 233—Biomass Boilers. Establishes NO<sub>x</sub> and CO emissions limits to biomass boilers. This rule is applicable to the direct combustion alternative to the proposed project.
- Rule 242—Stationary Internal Combustion Engines. Establishes limits for NO<sub>X</sub> and CO emissions from internal combustion engines.
- Rule 501—General Permit Requirements. Establishes that new stationary sources of air emissions, such as the biomass project this is the subject of this document, require operating permits from PCAPCD.
- Rule 502—New Source Review. Establishes permitting requirements for new sources. This includes thresholds for the requirement to utilize "Best Available Control Technology" and the need to meet "emission offsets" by obtaining emission reduction credits.
- Rule 507—Federal Operating Permit. Establishes the need for a federal "Title V" permit, and the requirements for this permit.

#### Toxic Air Contaminants

At the local level, air pollution control or management districts may adopt and enforce ARB's control measures. Under PCAPCD Rule 501 ("General Permit Requirements"), Rule 502 ("New Source Review"), and Rule 507 ("Federal Operating Permit"), all sources that possess the potential to emit TACs are required to obtain permits from the district. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new-source review standards (see Rule 502 above) and airtoxics control measures. PCAPCD limits emissions and public exposure to TACs through a number of programs. PCAPCD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors.

Sources that require a permit are analyzed by PCAPCD (e.g., health risk assessment) based on their potential to emit toxics. If it is determined that the project will emit toxics in excess of PCAPCD's threshold of significance for TACs (identified below), sources have to implement best available control technology (BACT) for TACs to reduce emissions. If a source cannot reduce the risk below the threshold of significance even after BACT has been implemented, PCAPCD will deny the permit required by the source. This helps to prevent new problems and

reduces emissions from existing older sources by requiring them to apply new technology when retrofitting with respect to TACs.

#### **O**DORS

PCAPCD has determined some common types of facilities that have been known to produce odors: wastewater treatment facilities, chemical manufacturing plants, painting/coating operations, feed lots/dairies, composting facilities, landfills, and transfer stations. Because offensive odors rarely cause any physical harm, and Federal and State air quality regulations do not contain any requirements for their control are included in Federal or State air quality regulations, PCAPCD has the authority to restrict and prevent the release of odorous air contaminants through Rule 205 (Nuisance):

■ Rule 205—Nuisance. A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons, or to the public, or which endanger the comfort, repose, health or safety of any such persons, or the public, or which cause to have a natural tendency to cause injury or damage to business or property. The provisions of Rule 205 do not apply to odors emanating from agriculture operations necessary for the growing of crops or raising of fowl or animals.

Any actions related to odors are based on citizen complaints to local governments and PCAPCD.

#### PLACER COUNTY GENERAL PLAN

The Placer County General Plan Air Quality Element provides County-wide goals and polices aimed at improving air quality (Placer County 1994). Goals and policies in the Air Quality Element parallel those identified in the State and federal plans applicable to Placer County. The following policies related to Goal 6.F of the General Plan, which is "to protect and improve air quality in Placer County":

- 6.F.1. The County shall cooperate with other agencies to develop a consistent and effective approach to air quality planning and management.
- 6.F.2. The County shall develop mitigation measures to minimize stationary-source and area-source emissions.
- 6.F.3. The County shall support the PCAPCD in its development of improved ambient air quality monitoring capabilities and the establishment of standards, thresholds, and rules to more adequately address the air quality impacts of new development.
- 6.F.4. The County shall solicit and consider comments from local and regional agencies on proposed projects that may affect regional air quality.
- 6.F.5. The County shall encourage project proponents to consult early in the planning process with the County regarding the applicability of Countywide indirect and area-wide source programs and transportation control measures programs. Project review shall also address energy efficient building and site designs and proper storage, use, and disposal of hazardous materials.
- 6.F.6. The County shall require project-level environmental review to include identification of potential air quality impacts and designation of design and other appropriate mitigation measures or offset fees to reduce impacts. The County shall dedicate staff to work with project proponents and other agencies in identifying, ensuring the implementation of, and monitoring the success of mitigation measures.

6.F.7. The County shall encourage development to be located and designed to minimize direct and indirect air pollutants.

- 6.F.8. The County shall submit development proposals to the PCAPCD for review and comment in compliance with CEQA prior to consideration by the appropriate decision-making body.
- 6.F.9. In reviewing project applications, the County shall consider alternatives or amendments that reduce emissions of air pollutants.
- 6.F.10. The County may require new development projects to submit an air quality analysis for review and approval. The County shall require appropriate mitigation measures consistent with the most recent Air Quality Attainment Plan.
- 6.F.11. The County shall apply the buffer standards described in Part I [of the General Plan] and meteorological analyses to provide separation between possible emission/nuisance sources (such as industrial and commercial uses) and residential uses. Generally, industrial/residential buffers shall be a minimum width of 300 feet, but may be reduced to not less than 100 feet where the buffer includes such features as screening walls, landscaped berms, and/or dense landscaping, with guarantees of proper, ongoing landscaping maintenance.

The following policies related to Goal 6.G of the General Plan, which is "to integrate air quality planning with the land use and transportation planning process," and are applicable to the proposed project:

- 6.G.1. The County shall require new development to be planned to result in smooth flowing traffic conditions for major roadways. This includes traffic signals and traffic signal coordination, parallel roadways, and intraand inter-neighborhood connections where significant reductions in overall emissions can be achieved.
- 6.G.4. The County shall consider instituting disincentives for single-occupant vehicle trips, including limitations in parking supply in areas where alternative transportation modes are available and other measures identified by PCAPCD and incorporated into regional plans.
- 6.G.7. The County shall require stationary-source projects that generate significant amounts of air pollutants to incorporate air quality mitigation in their design.

# EL DORADO COUNTY AIR POLLUTION CONTROL DISTRICT AND NORTHERN SIERRA AIR QUALITY MANAGEMENT DISTRICT

While the proposed biomass plant would be constructed and operated in Placer County, which is under the jurisdiction of PCAPCD, some operation-related activity would occur in neighboring air districts. The chipping of biomass in the forests where biomass is collected would also occur in the jurisdictions of the El Dorado County Air Pollution Control District (EDCAPCD) and the Northern Sierra Air Quality Management District (NSAQMD), as would some of the hauling of biomass to the Cabin Creek site and some employee commute trips. Trucks hauling biochar from the plant to the Lockwood Regional Landfill near Sparks, NV would pass through the jurisdictions of both PCAPCD and NSAQMD. These emission sources will be discussed in more detail in the impact analysis below. Like PCAPCD, EDCAPCD and NSAQMD work to attain and maintain air quality conditions in the Lake Tahoe Air Basin and the Mountain Counties Air Basin, respectively, through a comprehensive program of planning, and through the adoption and enforcement of rules and regulations concerning sources of air pollution.

#### TAHOE REGIONAL PLANNING AGENCY

In August 1982, TRPA adopted Resolution No. 82-11, which included Environmental Threshold Carrying Capacities (ETCC) related to air quality and other resource topics for the Lake Tahoe Region. TRPA conducts a comprehensive evaluation every 5 years to determine whether each ETCC is being achieved and/or maintained, makes specific recommendations to address problem areas, and directs general planning efforts for the next - year period. The most recent evaluation was completed in 2012 (TRPA 2012).

TRPA threshold standards address CO, ozone, regional and sub-regional visibility, and atmospheric deposition. Numerical standards have been established for each of these parameters, and management standards have been developed that are intended to assist in attaining the threshold standards. The management standards include reducing particulate matter, maintaining levels of  $NO_x$ , reducing traffic volumes on U.S. Highway 50, and reducing vehicle miles traveled. In addition, the Tahoe Regional Planning Compact states that the Tahoe Regional Plan shall provide for attaining and maintaining federal, state, or local air quality standards, whichever are strictest, in the respective portions of the region for which the standards are applicable.

TRPA also establishes Goals and Policies that are designed to achieve and maintain adopted ETCCs and are implemented through its Code of Ordinances. None of the provisions in TRPA's Code of Ordinances are directly applicable to the proposed project.

The Tahoe Metropolitan Planning Organization, the transportation division of TRPA, prepares a Regional Transportation Plan (RTP), which aims to attain and maintain the ETCCs and all applicable federal, state, and local standards established for transportation and air quality in the Lake Tahoe region (TMPO 2012). The RTP contains specific transportation infrastructure projects and transportation strategies designed to support air quality objectives of the Tahoe Regional Plan and to attain and maintain the TRPA threshold standards. The Regional Plan Update is in a process parallel with the update of the RTP. The Tahoe Regional Plan and RTP focus on new development in the Tahoe Basin and associated transportation needs. Because the proposed biomass power plant would be located outside of the Tahoe Basin, none of the features of the Tahoe Regional Plan and RTP are directly applicable to the proposed project. However, some project-related though some vehicle activity (e.g., biomass hauling, employee commute trips) and biomass chipping associated with operation of the proposed power plant would occur in the Lake Tahoe Basin.

## 9.3 IMPACTS

#### 9.3.1 SIGNIFICANCE CRITERIA

For this analysis, significance criteria are based on the checklist presented in Appendix G of the State CEQA Guidelines. Based on Appendix G of the State CEQA Guidelines, an air quality impact is considered significant if implementation of the project would do any of the following:

- conflict with or obstruct implementation of the applicable air quality plan;
- ✓ violate any air quality standard or contribute substantially to an existing or projected air quality violation (Table 9-4);
- result in a cumulatively considerable net increase of any criteria air pollutant for which the project region is in nonattainment under any applicable National or State ambient air quality standards (including releasing emissions that exceed quantitative standards for ozone precursors);
- expose sensitive receptors to substantial pollutant concentrations (including TACs/HAPs); or
- create objectionable odors affecting a substantial number of people.

As stated in Appendix G of the State CEQA Guidelines, the significance of criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. Thus, based on recommendations by PCAPCD, EDAPCD, and NSAQMD, the project would result in a potentially significant impact on air quality if:

- construction-generated criteria air pollutant or precursor emissions in Placer County would exceed the PCAPCD-recommended threshold of 82 pounds per day (lb/day) for ROG, NO<sub>x</sub>, or PM<sub>10</sub>;
- long-term operational (regional) criteria air pollutant or precursor emissions would exceed district-recommended thresholds (i.e., 82 lb/day for ROG, NO<sub>x</sub>, or PM<sub>10</sub> in Placer County [PCAPCD's jurisdiction]; 82 lb/day for ROG or NO<sub>x</sub>, or result in El Dorado County [EDCAPCD's jurisdiction]; or, for PM<sub>10</sub> and PM<sub>2.5</sub>, result in a violation of the ambient air quality standard or a substantial contribution to an existing or projected air quality violation; or exceed one of NSAQMD's tiers for ROG, NO<sub>x</sub>, or PM<sub>10</sub> without implementing all applicable reduction measures);
- Iong-term operational local mobile-source CO emissions would violate or contribute substantially to concentrations that exceed the California 1-hour ambient air-quality standard of 20 ppm or the 8-hour standard of 9 ppm; or
- exposure of sensitive receptors to TAC emissions would exceed 10 in 1 million for the carcinogenic risk (i.e., the risk of contracting cancer) or a noncarcinogenic Hazard Index of 1 for the maximally exposed individual.

## 9.3.2 METHODS AND ASSUMPTIONS

Short-term construction-related emissions of criteria air pollutants and precursors were calculated using the California Emissions Estimator Model (CalEEMod) Version 2011.1.1 computer program (SCAQMD 2011), as recommended by PCAPCD and other air districts in California. Modeling was based on project-specific information (e.g., size, amounts of gravel imported and material exported), where available, reasonable assumptions based on typical construction activities, and default values in CalEEMod that are based on the project's location and land use type. For a detailed description of model input and output parameters, and assumptions, refer to Appendix D.

Operational emissions of criteria air pollutants and precursors were estimated using a variety of sources and models.

Table 9-5 summarizes the project-related activities for which emissions were estimated; the model, protocol, and source of emission factors used; and the key input parameters on which each activity's emissions were determined. Operational emissions include those stationary-source emissions generated by the power plant and support emissions, which refer to emissions from those activities that directly support operation of the power plant and would not otherwise occur.

This significance determination in this quantitative analysis does not account for levels of emissions associated with the open burning of forest thinning debris and hazardous fuels in area forests that would be avoided by the operation of the biomass plant. This is because the air districts' respective mass emission thresholds are for maximum daily emission levels and the timing of open burning is unknown. In other words, it is likely that there would be days when all the emissions sources listed in Table 9-5 would be in operation, but open burning of forest refuse would not be taking place. For sake of disclosure, however, this chapter provides estimates of the levels of emissions from the open burning of the amount of biomass that would be consumed by the proposed biomass plant over the course of a year. These estimates are based on emission factors for open burning published by ARB (ARB 2006).

Table 9-5 Methodologies Used to Estimate Project-Related Operational Emissions of Criteria Air Pollutants and Precursors								
Category and Source	Model/Protocol/ Source of Emission Factors	Key Input Parameter(s)						
Construction Emissions	CalEEMod model <sup>1</sup>	hours of off-road equipment use						
Operational Emissions								
Syngas Combustion by Power Plant	Technology Providers <sup>2</sup>	biomass fuel type and composition						
Support Emissions	Support Emissions							
Natural Gas Combustion by Power Plant	EPA's AP 42 Emission Factors <sup>3</sup>	energy content of natural gas						
Chipping Biomass	Pilot Study <sup>4</sup> , ARB's Offroad2007 model <sup>5</sup>	diesel equipment use						
Trucks Hauling Biomass to Plant	ARB's Emfac2011 model <sup>6</sup> , EPA's Roadway Dust Emission Factors	VMT of haul routes						
Truck Activity at the Plant (Idling)	ARB's Emfac2011 model (truck module) <sup>8</sup>	truck-idle hours						
Loader at the Plant and Fuel Yard	ARB's Offroad2007 model <sup>5</sup>	hours of use						
Employee Trips	ARB's Emfac2011 model <sup>6</sup>	VMT of employee commute trips						
Trucks Hauling Biochar	ARB's Emfac2011 model <sup>6</sup> , EPA's Roadway Dust Emission Factors <sup>8</sup>	VMT of haul routes						

## VMT = vehicle miles travelled

#### Models:

<sup>1</sup> South Coast Air Quality Management District. 2011. California Emissions Estimator Model (CalEEMod), Version 2011.1.1. Available: <a href="http://www.caleemod.com/">http://www.caleemod.com/</a>. This model has been approved by ARB, PCAPCD, and all air districts in California.

- <sup>2</sup> Gasification power plant emissions estimates were reviewed and developed by PCAPCD staff using data from multiple technology providers that specialize in power generation using biomass feedstock. These estimates are published in a 2011 report prepared by TSS Consultants and PCAPCD (TSS and PCAPCD 2011).
- 3 U.S. Environmental Protection Agency. 1998 (July). Emission Factors & AP 42, Compilation of Air Pollutant Emission Factors, Section 1.4, Natural Gas Combustion. From EPA's Technology Transfer Network's Clearinghouse for Inventories and Emission Factors. Available: <a href="http://www.epa.gov/ttnchie1/ap42/ch01/final/c01s04.pdf">http://www.epa.gov/ttnchie1/ap42/ch01/final/c01s04.pdf</a>>. Accessed May 7, 2012.
- Sierra Nevada Conservancy. 2008 (November 17). Forest Biomass Removal on National Forest Lands: First Progress Report. Prepared by Placer County Chief Executive Office and TSS Consultants.
- 5 California Air Resources Board. 2006. Off-Road 2007 computer program, Version 2.0.1.2. Available: <a href="http://www.arb.ca.gov/html/soft.htm#modeling">http://www.arb.ca.gov/html/soft.htm#modeling</a>. Last updated April 14, 2010. Accessed May 2010.
- 6 California Air Resources Board. 2012 (February 8). Emfac2011 computer program. Sacramento, CA. Available: <a href="http://www.arb.ca.gov/msei/modeling.htm">http://www.arb.ca.gov/msei/modeling.htm</a>. Last updated [February 9, 2012]. Accessed May 3, 2012.
- U.S. Environmental Protection Agency 2006 (November). Emission Factors & AP 42, Compilation of Air Pollutant Emission Factors-Section 13.2.2 Unpaved Roads. Available http://www.epa.gov/ttnchie1/ap42/. Accessed May 5, 2012
- 8 California Air Resources Board. 2012 (February 8) (last updated). EMFAC2011 Idling Emission Rates. Available: <a href="http://www.arb.ca.gov/msei/modeling.htm">http://www.arb.ca.gov/msei/modeling.htm</a>. Accessed May 3, 2012.

Source: Methodologies researched and identified by Ascent Environmental in 2012.

The potential for vehicle trips generated by the project to contribute to exceedances of the NAAQS and CAAQS at congested intersections in the project area is evaluated using the screening methodology developed by Caltrans staff that is based on an intersection's level of service (LOS) (Garza, Graney, and Sperling 1997).

Construction-related emissions of TACs were evaluated based on the mass of PM<sub>2.5</sub> exhaust emitted by heavy-duty construction equipment, which is considered a surrogate for diesel PM, the duration of equipment use at any single location, the proximity of nearby sensitive receptors.

At this time, PCAPCD has not adopted a methodology for analyzing short-term construction-related emissions of TACs. Therefore, project-generated, construction-related emissions of TACs were assessed in a qualitative manner. With respect to long-term, operation-related exposure of sensitive receptors to emissions of TACs, levels of cancer and noncancer health risk were estimated based on the Health Risk Assessment (HRA) prepared by Air Permitting Specialists (Air Permitting Specialists 2011).

The assessment of odor-related impacts was based on the proximity of nearby receptors and the history of confirmed odor complaints for similar biomass power plants in the region.

#### 9.3.3 ISSUES OR POTENTIAL IMPACTS NOT DISCUSSED FURTHER

All issues discussed above under 9.3.1, Significance Criteria, are discussed below.

#### 9.3.4 **IMPACT ANALYSIS**

#### **Impact** 9-1

Short-Term, Construction-Generated Emissions of ROG, NO<sub>X</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>. Short-term, construction-generated emissions would not exceed PCAPCD's significance threshold for ROG. NO<sub>x</sub>, or PM<sub>10</sub>. Thus, short-term operational emissions of criteria area pollutants and precursors would not 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 would be less than significant.

Construction emissions are described as "short term" or temporary in duration and may represent a significant impact on air quality. The majority of construction-related emissions would be generated at the project site, which is in the jurisdiction of PCAPCD. Construction-related activities would result in project-generated emissions of ROG, NO<sub>x</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> from site preparation (e.g., excavation, grading, and clearing), off-road equipment, material delivery, and worker commute exhaust emissions, vehicle travel, and other miscellaneous activities (e.g., building construction, asphalt paving, application of architectural coatings). Fugitive dust emissions are associated primarily with site preparation and vary as a function of soil silt content, soil moisture, wind speed, acreage of disturbance, VMT on- and offsite, and other factors. Ozone precursor emissions of ROG and NO<sub>x</sub> are associated primarily with construction equipment exhaust and the application of architectural coatings.

The project includes the construction of a 10,800 square foot building that would contain the biomass energy facility, an approximate one-acre covered storage building, associated access roads, trenching for an underground transmission line connection, and a parking lot for employees. Construction activities would disturb a total of approximately 3.7 acres of currently forested or undeveloped land. Construction emissions are summarized in Table 9-6, below. Refer to Appendix D for a detailed summary of the modeling assumptions, inputs, and outputs.

Table 9-6 Summary of Modeled Emissions of Criteria Air Pollutants and Precursors Associated with Project Construction Activities								
	ROG (lb/day)	NO <sub>x</sub> (lb/day)	PM <sub>10</sub> (lb/day)	PM <sub>2.5</sub> (lb/day)				
Maximum Daily Emissions	69	40	8	5				
PCAPCD Thresholds of Significance	82	82	82	NA				

Notes:

ROG = reactive organic gases  $NO_X$ 

= oxides of nitrogen

PM<sub>10</sub> = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less PM<sub>2.5</sub> = respirable particulate matter with an aerodynamic diameter of 2.5 micrometers or less

lb/day = pounds per day

PCAPCD = Placer County Air Pollution Control District

Modeled values represent maximum daily emissions that would occur over the duration of the construction period. See Appendix D for detail on model inputs, assumptions, and project specific modeling parameters. Source: Modeling Conducted by Ascent Environmental 2012.

As shown in Table 9-6, construction of the project would result in maximum unmitigated daily emissions of approximately 69 lb/day of ROG, 40 lb/day of  $NO_X$ , 8 lb/day of  $PM_{10}$  and 5 lb/day of  $PM_{2.5}$ . Fugitive dust emissions would also be minimized due to the dust control practices that would be implemented as part of Construction Measure 1 of the project's Environmental Commitments, as presented in Section 3, Project Description. Exhaust emissions would also be reduced due to Construction Measure 3, which requires contractors to limit idling by off-road equipment to less than 5 minutes. Short-term construction-generated emissions would not exceed PCAPCD's significance threshold for ROG,  $NO_X$ , or  $PM_{10}$ , and thus, would not be expected to contribute to pollutant concentrations that exceed the NAAQS or CAAQS. Because construction-generated  $PM_{10}$  emissions would be less than the applicable threshold of 82 lb/day, and because  $PM_{2.5}$  is a subset of  $PM_{10}$ , it is not anticipated that construction activity would result in concentrations of  $PM_{2.5}$  that would violate or substantially contribute to a violation of the ambient air quality standards for  $PM_{2.5}$ . In addition, operational emissions would not directly violate any ETCCs of the TRPA. This would be a **less-than-significant** impact.

#### Impact 9-2

Long-Term, Operation-Related (Regional) Emissions of Criteria Air Pollutants and Precursor Emissions. Operation of the project would not result in mass emissions of criteria air pollutants or precursors in the Mountain Counties Air Basin or the Lake Tahoe Air Basin that exceed applicable mass emission thresholds. Thus, long-term operational emissions of criteria air pollutants and precursors would not 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 would be less than significant.

Emissions of criteria air pollutants and precursors would be generated throughout the operational life of the project. Stationary-source operational emissions would consist of those emissions resulting from combustion of syngas at the power plant. The biomass gasified at the power plant would be from forest residuals. Forest biomass consumed by the proposed facility would consist of debris from forest thinning and hazardous fuels reduction projects. Emissions of NO<sub>x</sub>, ROG, PM<sub>10</sub>, CO, and oxides of sulfur generated by the plant would be subject to PCAPCD Rule 502, New Source Review, and subject to applicable BACT and offset requirements. The project stationary source emissions estimates are from the greater of estimates for two different gasification technologies that were recently evaluated in a study sponsored by the project applicant (TSS & PCAPCD 2011). Direct emissions from the biomass plant would be subject to the PCAPCD permitting requirements, including PCAPCD Rules 501 and 502. While exact details would not be known until the applicant and the specific gasification technology is determined, based on the projected project emissions levels and BACT requirements in Rule 502, BACT would be required for NO<sub>x</sub> and VOCs. To meet these BACT requirements, selective catalytic reduction would be used to control NO<sub>x</sub> if the gasification plant consists of a lean-burn engine design and a three-way catalytic converter would be used to control NO<sub>x</sub> from a rich-burn engine operation. Combustion controls would be used to reduce VOC emissions from a lean-burn engine and a combination of combustion controls and a catalytic converter would be used to reduce VOC emissions from a rich-burn engine. While BACT is not required for particulate matter, a BACT-equivalent control device, high efficiency wet scrubber (or equivalent), would be used to control fine particulate from the gasifier for syngas cleaned up prior to combustion in the engine. Similarly, although BACT would not be required to control CO, a combustion control and/or a catalytic converter would be used to meet a BACT-like level. Because projected gasification/engine system emissions would be below the PCAPCD Rule 502 offset thresholds, emission reduction credits would not be required to permit the project (TSS & PCAPCD 2011).

Further, the PCAPCD stationary source permit for the proposed project would include restrictions on gasifier/engine system operations to ensure emissions limits and emissions criteria are being achieved on a continuous, long-term, basis. Conditions would address woody biomass type, composition (moisture and energy content), and the processing feed rate. PCAPCD would also require a monitoring procedure that directly

measures stack gas emissions of CO,  $NO_X$ , and opacity, as well as gasifier/engine operating characteristics including temperatures, flow rates, and pressure. Periodic source testing by independent contractors would also be required to demonstrate compliance with emissions limits. The permit would also contain record keeping and reporting requirements to ensure monitoring activities are properly performed. PCAPCD staff would also conduct periodic, unannounced, on-site inspections to confirm permit conditions are met.

Additional operational activities would also result in emissions of criteria air pollutants and precursors, including the chipping of biomass before it is hauled to the plant, trucks hauling biomass to the plant and idling at the project site on both paved and unpaved roads, operation of a loader at the plant and fuel yard, employee commute trips, and trucks hauling biochar away from the plant. As mentioned above, because these activities directly support operation of the power plant and would not otherwise occur but for operation of the plant, emissions from these activities are referred to as support emissions.

Table 9-7 summarizes the stationary and support emissions associated with operation of the project as well as the air district jurisdictions in which the emissions would occur. Refer to Appendix D for a detailed summary of the modeling assumptions, inputs, and outputs.

Table 9-7 Summary of Operational Emissions of Criteria Air Pollutants and Precursors									
	Maximum Daily Operational Emissions (lb/day) <sup>1</sup>			Jurisdictions where Pollutants would be Emitted					
Emissions Source	NO <sub>X</sub>	ROG	PM <sub>10</sub>	PM <sub>2.5</sub>	PCAPCD portion of MCAB	PCAPCD portion of LTAB	EDCAQMD portion of LTAB	NSAQMD portion of MCAB	Nevada portion of LTAB
Syngas Combustion by Power Plant	15.4	72.0	14.4	14.4	all	none	none	none	None
Chipping Biomass	42.2	4.0	1.4	1.4	some	some	some	some	Some
Truck Activity at the Plant	0.7	<0.1	<0.1	<0.1	all	none	none	none	None
Loader Activity at the Plant	8.8	0.9	0.3	0.3	all	none	none	none	None
Employee Commute Trips	0.3	0.3	<0.1	<0.1	some	some	some	some	Some
Trucks Hauling Biomass	9.5	0.2	13.4	1.4	some	some	some	some	None
Trucks Hauling Biochar	0.9	<0.1	<0.1	<0.1	some	some	none	some	None
Total	77.7	77.5	29.5	17.5	some	some	some	some	Some
PCAPCD Thresholds	82	82	82	none			_		
EDCAQMD Thresholds	82	82	none	none					
NSAQMD's Level A Tier	24	24	79	none					

Notes:

ROG = reactive organic gases

 $O_X$  = oxides of nitrogen

PM<sub>10</sub> = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less PM<sub>2.5</sub> = respirable particulate matter with an aerodynamic diameter of 2.5 micrometers or less

lb/day = pounds per day

PCAPCD = Placer County Air Pollution Control District
EDCAQMD = El Dorado County Air Quality Management District
NSAQMD = Northern Sierra Air Quality Management District

MCAB = Mountain Counties Air Basin LTAB = Lake Tahoe Air Basin

Source: Modeling Conducted by Ascent Environmental 2012.

<sup>&</sup>lt;sup>1</sup> Modeled values represent maximum daily emissions that would occur on a worst-case day. See Appendix D for detail on model inputs, assumptions, and project specific modeling parameters.

As shown in Table 9-7, operation of the project would result in maximum daily emission increases in  $NO_x$ , ROG,  $PM_{10}$ , and  $PM_{2.5}$  of approximately 78 lb/day, 78 lb/day, 30 lb/day, and 18 lb/day, respectively. These maximum daily levels are less than the mass emission thresholds established by PCAPCD. Further, as shown in Table 9-7, not all of these emissions would occur inside PCAPCD's jurisdiction. For instance, mobile-source emissions generated by employee commute trips and truck hauling of biomass and biochar would also take place in the jurisdictions of EDAQMD and NSAQMD. In addition, chipping, which would be the largest operational source of  $NO_x$  emissions, would occur in the various forests where biomass is collected, which are located in the jurisdictions of PCAPCD, EDCAQMD, NSAQMD, and in Nevada. On a worst-case day when all chipping activities and the majority of truck travel by trucks hauling chipped biomass are taking place in the jurisdiction of EDCAQMD, associated mass emissions would not exceed EDCAQMD's mass emission thresholds of 82 lb/day for  $NO_x$ , ROG, or  $PM_{10}$ .

Depending on how much of the chipping is performed in forests located in NSAQMD's jurisdiction, associated emissions, in combination with emissions from truck hauling of biomass and biochar, could exceed NSAQMD's Level A tier of 24 lb/day for NO<sub>X</sub>. NSAQMD has established three tiers of mass emission levels and the projects with operational emissions that exceed the Level A tier are required to implement mitigation identified in NSAQMD's CEQA guidance (NSAQMD 2009). All of the NSAQMD-recommended mitigation that are applicable to the project are inherent to the project's design. For example, the measure that recommends the use of grid power and implementing temporary traffic controls during construction and limiting the number of woodburning appliances in residential units would not be applicable to the project because no construction activity would occur in NSAQMD's jurisdiction. The other NSAQMD-recommended measure of using alternatives to open burning of vegetation be used unless otherwise deemed infeasible by NSAQMD and suitable alternative include chipping, mulching, or conversion of vegetative material to biomass fuel is inherent to the design of the project. Therefore, the project has complied with Level A requirements to the fullest extent possible, and no further mitigation can be implemented.

Moreover, minimal fugitive dust emissions would occur during transport and handling of biochar that is hauled away from the plant because the applicant would require the hauler to fully enclose the biochar during transport, as stated in Operation Measure 1 of the Environmental Commitments. Exhaust emissions would also be reduced due to implementation of Operation Measure 3, which requires the loader and visiting trucks to not idle for more than 5 minutes.

Because operational emission of  $PM_{10}$  would be less than the applicable air district thresholds, and because  $PM_{2.5}$  is a subset of  $PM_{10}$ , it is not anticipated that project operations would result in concentrations of  $PM_{2.5}$  that would violate or substantially contribute to a violation of the ambient air quality standards for  $PM_{2.5}$ . Also, the total maximum daily emissions of  $PM_{10}$ ,  $PM_{2.5}$ , and other criteria area pollutants and precursors would not occur at any single location due to the dispersed nature of associated truck trips and chipping activity.

In summary, the project would not generate operational emissions of criteria air pollutants and precursors in effected air districts that would exceed applicable mass emission thresholds (i.e., PCAPCD and EDCAQMD) and applicable NSAQMD recommended mitigation are inherent to the project design. Thus, long-term operational emissions of criteria air pollutants and precursors would not 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. In addition, operational emissions would not directly violate any ETCCs of the TRPA. As a result, this would be a **less-than-significant** impact.

As discussed above, this significance determination does not account for the fact that operation of the biomass plant would result in a reduction in the open burning of forest-sourced biomass and associated emissions. While the level of open burning that would occur on any particular day is unknown, the quantity of biomass that would be consumed by the proposed plant and, thus, not open burned in the forests, is known. The annual level of "avoided emissions" generated by the open burning of biomass is presented in Table 9-8

Table 9-8 Avoided Emissions of Criteria Air Pollutants and Precursors Associated with Open Burning(tons/year)								
Avoided Emissions	NO <sub>X</sub>	ROG	PM <sub>10</sub>	PM <sub>2.5</sub>				
Open Burning of Forest-Sourced Biomass	78	102	167	142				

Notes:

ROG = reactive organic gases NO<sub>x</sub> = oxides of nitrogen

PM<sub>10</sub> = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less PM<sub>2.5</sub> = respirable particulate matter with an aerodynamic diameter of 2.5 micrometers or less

tons/year = tons per year

Estimated emissions levels assume that 17,000 bone dry tons of forest-sourced biomass would be consumed by the plant. Appendix X for detail on model inputs, assumptions, and project specific modeling parameters.

Source: Modeling Conducted by Ascent Environmental 2012.

As shown in Table 9-8, a biomass plant that would consume 17,000 bone dry tons of biomass per year would result in an annual reduction of 78 tons/year of  $NO_x$ , 102 tons/year of ROG, 167 tons/year of  $PM_{10}$ , and 142 tons/year of  $PM_{2.5}$ .

## Impact 9-3

**Mobile-Source CO Concentrations.** Short-term, construction-generated emissions would not exceed PCAPCD's significance threshold for ROG, NOx, or PM<sub>10</sub>, and thus, would not be expected to contribute to pollutant concentrations that exceed the NAAQS or CAAQS. This would be a **less-than-significant** impact.

Local mobile-source CO emissions near roadway intersections are a direct 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 certain specific meteorological conditions, CO concentrations near roadways and/or intersections may reach unhealthy levels at nearby sensitive land uses, such as residential units, hospitals, schools, and childcare facilities. Thus, high local CO concentrations are considered to have a direct influence on the receptors they affect. Modeling of CO concentrations is typically recommended for areas located near signalized roadway intersections that are projected to operate at an unacceptable level of service (LOS) (i.e., LOS E or F) during peak traffic hours (Garza, Graney, and Sperling 1997).

Unsignalized intersections do not experience high enough traffic volumes and associated congestion to result in local violations of the AAQS; therefore, CO modeling is not recommended for unsignalized intersections (Garza, Graney, and Sperling 1997). Because unsignalized intersections would accommodate fewer vehicles than signalized intersections, it is reasonable to conclude that congestion at these intersections would not result in CO concentrations that exceed the AAQS. Based on the traffic study conducted for the project (See Impact 8-2 in Chapter 8 Traffic and Transportation), the project would not result in traffic volumes that meet criteria for installing a traffic signal. Additionally, as shown in Table 8-10, the intersection would operate at LOS A with or without traffic generated by the project. Therefore, implementation of the project would not result in substantial increases in vehicle congestion at the study intersection.

Thus, even though the project would result in additional vehicle trips, project-generated local mobile-source CO emissions would not result in or substantially contribute to concentrations that exceed the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm. As a result, this impact would be **less than significant**.

**Impact** 9-4

Toxic Air Contaminant Concentrations. Construction and operation of the project would result in increased health risk levels associated with short-and long-term emissions of diesel PM and other TACs. However, the incremental increase in health risk levels, including cancer risk and noncancer chronic risk, would not exceed applicable thresholds at affected sensitive receptors. As a result, this impact would be less than significant.

The exposure of sensitive receptors to emissions of TACs from onsite sources during construction and operation of the project are discussed separately below.

#### SHORT-TERM CONSTRUCTION-RELATED EMISSIONS

Construction-related activities would result in temporary, short-term project-generated emissions of diesel PM from the exhaust of off-road, heavy-duty diesel equipment for site preparation (e.g., demolition, grading, excavation, grading, and clearing); paving; application of architectural coatings; and other miscellaneous activities. Based on the CalEEMod modeling performed for the analysis of mass emissions of criteria air pollutants and precursors under Impact 9-2, off-road, diesel-powered equipment operated during project construction would generate up to 2.21 pounds of diesel PM exhaust emissions at the project site during the more intensive phases of the approximate 14-month construction effort. Refer to Appendix D for detailed assumptions and calculations.

Diesel PM was identified as a TAC by ARB in 1998. The potential cancer risk from the inhalation of diesel PM, as discussed below, outweighs the potential for all other health impacts (ARB 2003). At this time, PCAPCD has not adopted a methodology for analyzing such impacts.

The closest sensitive receptor is a house located approximately 775 northwest of the southern end of the project site. Given that the predominant wind direction is from the south (WRCC 2012b), as described in the setting above; that diesel PM-emitting equipment would be operated throughout the construction site, shown in Exhibit 11-1; and the highly dispersive properties of diesel PM (Zhu et al. 2002), it is not anticipated that the closest receptor would be exposed to high concentrations of diesel PM.

Moreover, the dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project (OEHHA 2001). Thus, because the use of off-road heavyduty diesel equipment would be temporary, because there are no sensitive receptors located immediately downwind of the project site, construction-related emissions of TACs would not expose sensitive receptors to substantial emissions of TACs. As a result, this impact would be less than significant.

#### LONG-TERM OPERATION-RELATED EMISSIONS

In order to estimate the level of health risk exposure from stack and equipment emissions at the plant, a detailed HRA was performed for the PCAPCD Planning Services Division (Air Permitting Specialists 2011), and is included in Appendix E. The HRA included dispersion modeling of a variety of TACs that would be emitted during plant operations, including emissions of polycyclic aromatic hydrocarbons, benzene, and nickel; and emissions of diesel PM by the loader in the fuel yard, trucks delivering biomass, trucks picking up biochar, and the diesel-

powered grinders that already operate at the Eastern Regional MRF and Transfer Station. Air dispersion modeling was performed with the Industrial Source Complex dispersion model using hourly meteorological data to estimate the maximum one-hour and maximum annual concentrations of TACs at nearby residences. Health risk factors were applied to estimate the incremental increase in levels of cancer risk, chronic hazard risk (noncancer), and acute hazard risk to which nearby residences would be exposed. The HRA determined the maximum incremental increase in cancer risk from the long-term operation of the biomass plant would be 2.4 in chances per million. It also estimated the chronic hazard index and acute hazard index to be 0.0082 and 0.105, respectively. Details of these calculations are presented in Appendix E. These levels would be less than PCAPCD's significance thresholds of an incremental increase in cancer risk of 10 in one million and/or exceedance of a noncarcinogenic Hazard Index of 1 for the maximally exposed individual. Thus, the effects from long-term operational onsite emissions associated with the project would not result in the exposure of any offsite sensitive receptors to levels that exceed applicable thresholds. As a result, this would be a **less-than-significant** impact.

#### Impact 9-5

**Odorous Emission.** The project would introduce new odor sources into the area (e.g., diesel exhaust emissions, storage piles of biomass). However, these odor sources would not be expected to adversely affect adjacent land uses because project operations would include provisions that would guard against anaerobic activity in biomass storage piles and because the nearest sensitive receptor to odors is located over 1,000 feet to the west, beyond the MRF site. Therefore, this impact would be considered **less than significant**.

The occurrence and severity of odor impacts depends 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. Projects with the potential to frequently expose a substantial number of members of the public to objectionable odors would be deemed to have a significant impact.

The closest sensitive land use to the project site is the onsite residence located approximately 775 feet to the northwest of the project site.

The construction of the project would result in diesel exhaust emissions from onsite construction equipment. The diesel exhaust emissions would be intermittent and temporary and Construction Measures 2 and 3, which are listed as Environmental Commitments in Section 3, Project Description, would reduce the amount of diesel exhaust generated during project construction. Similarly, Operation Measures 3, also listed among the Environmental Commitments, would minimize the amount of diesel exhaust generated during project operations by limiting idling by the on-site loader and visiting diesel trucks. Diesel exhaust would also dissipate rapidly from the source with an increase in distance.

Odors could potentially result if piles of woody biomass would be stored for an extended period such that anaerobic activity occurs in the piles. However, the potential for anaerobic activity to occur would be diminished because fuels from various sources would be frequently mixed to make sure that the stream of fuel conveyed to the boiler is consistent in size, moisture, and energy content. Also, the biomass fuel would generally move through the facility on a first in, first out basis. Furthermore, Mitigation 16-4 would require the applicant to prepare and follow detailed written procedures for minimizing odors from the storage piles, among other objectives, that must be approved by the County Local Enforcement Agency and the Truckee Fire Protection District. Among these procedures is the requirement to visually inspect the piles regularly with portable temperature probes to prevent potential fires. These inspections would also serve as a precaution against odorgenerating anaerobic activity in the fuel piles.

The odor complaint history of other biomass power plants in the region reveals that facilities similar to the project have not received any confirmed odor complaints. No odor complaints have been recorded by PCAPCD for the 20 MW facility operated by Sierra Pacific Industries near Lincoln, which burns agricultural waste and sawmill waste (Springsteen, pers. comm., 2010); no confirmed odor complaints have been recorded by the San Joaquin Valley Air Pollution Control District from the 23 MW biomass power facility operated near Tracy or the biomass power plant outside the city of Merced (Giannone, pers. comm., 2010); and no confirmed complaints were received by the Yolo-Solano Air Quality Management District regarding the biomass power plant in Woodland (Smith, pers. comm., 2010).

Because project operations would include provisions that would guard against anaerobic activity in fuel storage piles at the fuel yard and because the nearest sensitive receptor to odors is located over 1,000 feet to the west, beyond the MRF site, the project would not be expected to create objectionable odors that would affect a substantial number of people. Also, the project would be subject to PCAPCD Rule 205 (Nuisance) regarding the control of nuisances. This impact would be considered **less than significant**.

## 9.4 MITIGATION MEASURES

No mitigation measures are necessary.