10 AIR QUALITY

This chapter includes a discussion of existing air quality conditions, a summary of applicable regulations, and an analysis of potential short-term and long-term air quality impacts that could result from buildout of the Village at Squaw Valley Specific Plan (VSVSP). The method of analysis for short-term construction, long-term regional (operational), local mobile-source, and toxic air emissions is consistent with the recommendations of the Placer County Air Pollution Control District (PCAPCD), the California Air Resources Board (ARB), and the U.S. Environmental Protection Agency (EPA). In addition, mitigation measures are recommended as necessary to reduce significant air quality impacts.

10.1 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 eastern Placer County, portions of El Dorado County, and all of Plumas, Sierra, Nevada, Amador, Calaveras, Tuolumne, and Mariposa counties. Some vehicle activity, particularly visitor trips and employee commute trips, associated with operation of the proposed project would also occur in the Lake Tahoe Air Basin (LTAB), other portions of Placer and El Dorado Counties, as well as parts of California and Nevada.

The ambient concentrations of air pollutant emissions in an air basin 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.

10.1.1 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 MCAB generally experiences warm, dry summers and wet winters. During the summer, in the western portion of the MCAB where the project site is located, temperatures often exceed 85 degrees Fahrenheit (°F) coupled with clear sky conditions, which is favorable for ozone formation. Local climatology of the project site is best represented by ambient temperature measurements at the Squaw Valley Lodge and wind measurements at Truckee Airport. Maximum temperatures occur during July and reach 80°F on average. Minimum temperatures can be as low at 15°F during winter months (Western Regional Climate Center [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 (mph) from the south (WRCC 2012b).

10.1.2 Air Quality Standards and Existing Concentrations

CRITERIA AIR POLLUTANTS

Concentrations of ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}), fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead are used as indicators of ambient air quality conditions and are referred to as criteria air pollutants (CAPs). CAPs are air pollutants for which

acceptable levels of exposure can be determined and for which an ambient air quality standard has been set by EPA and ARB.

A brief description of each CAP's source types and health effects is provided below in Table 10-1. Additional information, including future trends and monitoring data at those monitoring stations located closest to the project site, is provided for ozone, NO_2, and PM, the key CAPs associated with the project analysis.

Table 10-1 Sources and Health Effects of Criteria Air Pollutants

Pollutant	Sources	Acute[1] Health Effects	Chronic[2] Health Effects
Ozone	Secondary pollutant resulting from reaction of ROG and NO_X in presence of sunlight. ROG emissions result from incomplete combustion and evaporation of chemical solvents and fuels; NO_X 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_2)	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_2)	coal and oil combustion, steel mills, refineries, and pulp and paper mills	Irritation of upper respiratory tract, increased asthma symptoms	insufficient evidence linking SO_2 exposure to chronic health impacts
Respirable particulate matter (PM_{10}), Fine particulate matter ($PM_{2.5}$)	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_2 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
[1] "Acute" refers to effects of short-term exposures to criteria air pollutants, usually at fairly high concentrations.
[2] "Chronic" refers to effects of long-term exposures to criteria air pollutants, usually at lower, ambient concentrations.
Source: EPA 2012a

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. Ozone is not directly emitted into the air in large amounts, 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 (EPA 2012a). ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. 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 two decades because of more stringent motor vehicle standards and cleaner burning fuels (ARB 2014a:3-4 and 4-46).

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. 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 2012a).

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 2014a:1-13 and 3-6; EPA 2012a). Fine particulate matter ($PM_{2.5}$) includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less. PM_{10} emissions are dominated by emissions from area sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, farming operations, construction and demolition, and particles from residential fuel combustion. Direct emissions of PM_{10} have increased slightly over the last 20 years, and are projected to continue to increase slightly through 2035 (ARB 2014a:3-7). $PM_{2.5}$ emissions have remained relatively steady over the last 20 years and are projected to decrease slightly through 2035 (ARB 2014a:3-6).

CRITERIA AIR POLLUTANT AND PRECURSOR MONITORING STATION DATA AND ATTAINMENT AREA DESIGNATIONS

Concentrations of CAPs are measured at several monitoring stations in and near the MCAB. The measurements at the Truckee Fire Station, Tahoe City Fire Station, South Lake Tahoe Airport Station, and the South Lake Tahoe-Sandy Way Station are presented here and are generally representative of ambient air quality in the vicinity of the project area. Table 10-2 summarizes the air quality data from these stations for 2011–2013.

Table 10-2 Summary of Annual Air Quality Data (2011–2013)[1]

Ozone[2]	2011	2012	2013
Maximum concentration (1-hour/8-hour, ppm)	0.058/0.053	NA	0.049/0.046
Number of days state standard exceeded (1-hour/8-hour)	0/0	NA	0/0
Number of days national standard exceeded (1-hour/8-hour)	0/0	NA	0/0
Respirable Particulate Matter (PM_{10})[3]	**2011**	**2012**	**2013**
Maximum Concentration ($\mu g/m^3$) (California)	55.8	84.1	139.3
Number of days state standard exceeded (measured [5])	3	4	4
Number of days national standard exceeded (measured [5])	*	*	*
Fine Particulate Matter ($PM_{2.5}$)[4]	**2011**	**2012**	**2013**
Maximum Concentration ($\mu g/m^3$) (California)	68.9	27.5	61.2
Annual Average ($\mu g/m^3$) (California)	6.6	6.1	8.2
Number of days national standard exceeded (measured [5])	0	0	1

Notes: $\mu g/m^3$ = micrograms per cubic meter; NA = data not available; ppm = parts per million; * = Insufficient data to determine the value

1 The ambient air quality standards and attainment status for these pollutants are presented in Table 10-3.

2 Ozone data for 2011 is from the Truckee Fire Station. Ozone data for 2013 is from the Tahoe City Station. No measurement data is available from either station for 2012.

3 PM_{10} measurements are from the monitoring station in South Lake Tahoe.

4 $PM_{2.5}$ data is from the Truckee Fire Station.

5 Measured days are those days that an actual measurement was greater than the level of the state daily standard or the national daily standard.

Source: ARB 2014b

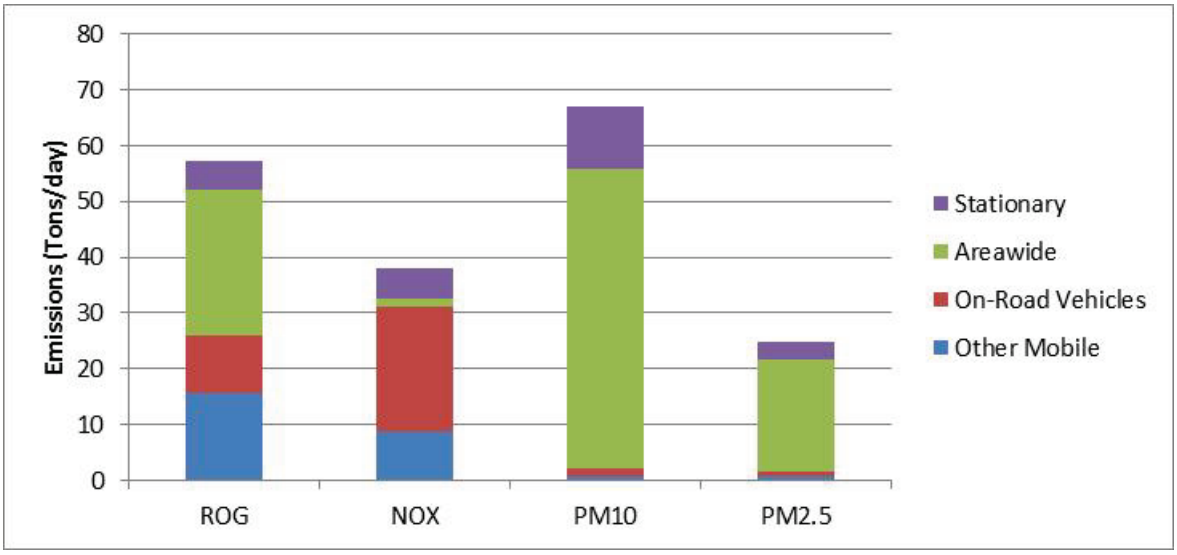
TOXIC AIR CONTAMINANTS

Concentrations of toxic air contaminants (TACs), or in federal parlance, hazardous air pollutants (HAPs), are also used to indicate the quality of ambient air. A TAC is defined as 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 minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. Unlike CAPs, TACs are pollutants of local concern because they can present harmful effects when they are emitted in close proximity to sensitive receptors.

The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most prominent being diesel PM (ARB 2005:9). 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.

10.1.3 Existing Emission Sources

Exhibit 10-1 summarizes emissions of CAPs and precursors within the MCAB portion of Placer County for various source categories in 2012 (the most recent data available). According to the 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 18 percent and 58 percent, respectively, of the total emissions. Areawide sources account for approximately 80 percent and 82 percent of the County's PM_{10} and $PM_{2.5}$ emissions, respectively (ARB 2013a).



Source: ARB 2013a

Exhibit 10-1 **Mountain Counties Air Basin 2012 Emissions Inventory**

10.1.4 Sensitive Land Uses

Land uses considered sensitive to air quality are generally those that include uses where exposure to pollutants could result in health-related risks to individuals. Sensitive receptors are people, or facilities that generally house people (e.g., schools, hospitals, residences), that may experience adverse effects from unhealthful concentrations of air pollutants. Existing sensitive land uses near the project site include the resort residences in the existing Village. The nearest sensitive receptors to the East Parcel include single family homes along Trail's End and the east end of Indian Trail Road. Approximately four to six of these homes are located within 75 feet of the boundary to the East Parcel.

Regarding emissions of diesel PM, emissions from diesel mobile sources are projected to continue to decrease after 2010 due to the implementation of various emission control regulations. Overall, statewide emissions are forecasted to decline by 71 percent between 2000 and 2035 (ARB 2014a:3-8). Sources of diesel PM at and around the project site include diesel trucks, backup diesel generators, and diesel-powered snow removal equipment.

10.2 REGULATORY SETTING

Air quality in the project area is regulated by EPA, ARB, and PCAPCD. 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.

10.2.1 Federal

EPA has been charged with implementing national air quality programs. EPA air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments 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 10-3, EPA has established primary and secondary NAAQS for the following CAPs: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, 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), for areas that do not attain the NAAQS. The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with areas that are not in attainment of all NAAQSs 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 permitting of stationary air pollution sources in the nonattainment air basin.

Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan

Under the CAA requirements, each nonattainment area throughout the state is required to develop a regional air quality management plan. Collectively, all regional air quality management plans throughout the state constitute the SIP. With jurisdiction over part of the Sacramento Federal Ozone Nonattainment Area (which covers the project area), PCAPCD worked with the other local air districts within the Sacramento area

Table 10-3 Ambient Air Quality Standards and Attainment Status in Placer County

Pollutant	Averaging Time	California Attainment Status	California [a,b]	National Attainment Status	National [c]	
					Primary [b,d]	Secondary [b,e]
Ozone	1-hour	N	0.09 ppm (180 µg/m^3)	–	–[e]	Same as primary standard
	8-hour		0.070 ppm (137 µg/m^3)	N[g]	0.075 ppm (147 µg/m^3)	
Carbon monoxide (CO)	1-hour	U	20 ppm (23 mg/m^3)	U	35 ppm (40 mg/m^3)	Same as primary standard
	8-hour		9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	
Nitrogen dioxide (NO_2) [g]	Annual arithmetic mean	A	0.030 ppm (57 µg/m^3)	U	53 ppb (100 µg/m^3)	Same as primary standard
	1-hour		0.18 ppm (339 µg/m^3)		100 ppb (188 µg/m^3)	–
Sulfur dioxide (SO_2)	Annual arithmetic mean	A	–	U	0.030 ppm	–
	24-hour		0.04 ppm (105 µg/m^3)		0.14 ppm	
	3-hour		–		–	0.5 ppm (1300 µg/m^3)
	1-hour		0.25 ppm (655 µg/m^3)		75 ppb (196 µg/m^3)	–
Respirable particulate matter (PM_{10})	Annual arithmetic mean	N	20 µg/m^3	U	–	Same as primary standard
	24-hour		50 µg/m^3		150 µg/m^3	
Fine particulate matter ($PM_{2.5}$)	Annual arithmetic mean	N	12 µg/m^3	U	12.0 µg/m^3	15.0 µg/m^3
	24-hour		–		35 µg/m^3	

Table 10-3 Ambient Air Quality Standards and Attainment Status in Placer County

Pollutant	Averaging Time	California Attainment Status	California [a,b]	National Attainment Status	National [c]	
					Primary [b,d]	Secondary [b,e]
Lead [f]	Calendar quarter	A	–	U	1.5 µg/m^3	Same as primary standard
	30-Day average		1.5 µg/m^3		–	–
	Rolling 3-Month Average		–		0.15 µg/m^3	Same as primary standard
Hydrogen sulfide	1-hour	U	0.03 ppm (42 µg/m^3)	No national standards		
Sulfates	24-hour	A	25 µg/m^3			
Vinyl chloride [f]	24-hour	–	0.01 ppm (26 µg/m^3)			
Visibility-reducing particulate matter	8-hour	U	Extinction of 0.23 per km			

Notes: µg/m^3 = micrograms per cubic meter; km = kilometers; ppb = parts per billion; ppm = parts per million

Unclassified (U): a pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.

Attainment (A): a pollutant is designated attainment if the standard for that pollutant was not violated at any site in the area during a 3-year period.

Nonattainment (N): a pollutant is designated nonattainment if there was a least one violation of a standard for that pollutant in the area.

[a] California standards for ozone, SO_2 (1- and 24-hour), NO_2, 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 (CAAQS) are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] 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.

[c] 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_{10} 24-hour standard is attained when 99% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The $PM_{2.5}$ 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

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

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

[f] 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.

[g] The portion of the Mountain Counties Air Basin in Placer County is part of the Sacramento Federal Ozone Nonattainment Area and is designated as severe nonattainment with respect to the national ambient air quality standard for ozone (Chang, pers. comm., 2013).

Sources: ARB 2013b, ARB 2013c; EPA 2012b

to develop a regional air quality management plan to describe and demonstrate how Placer County, as well as the Sacramento federal nonattainment area, would attain the required federal 8-hour ozone standard by the proposed attainment deadline. In accordance with the requirements of the CAA, PCAPCD, along with the other air districts in the region, prepared the *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (Ozone Attainment Plan) in December 2008. The PCAPCD adopted the Ozone Attainment Plan on February 19, 2009, and ARB determined that the plan meets CAA requirements and approved it on March 26, 2009, as a revision to the SIP. Accordingly, the *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* is the applicable air quality plan for the region.

Since the adoption of the Ozone Attainment Plan in early 2009, and its subsequent revision in 2011, there were significant updates to emissions calculation methods, vehicle traveled activity data, and growth assumptions used to develop the Plan.

The 2013 Ozone Attainment Plan revision shows that the region continues to meet federal progress requirements and demonstrates that the Sacramento Region will meet the 1997 NAAQS by 2018. The 2013 Ozone Attainment Plan updates the emissions inventory, provides a review of photochemical modeling results based on changes in the emissions inventories, updates the reasonable further progress and attainment demonstrations, revises adoption dates for control measures, and establishes new motor vehicle emissions budgets for transportation conformity purposes. The 2013 Ozone Attainment Plan also includes a vehicle mile traveled (VMT) offset demonstration that showed the emissions reduction from transportation control measures and strategies are sufficient to offset the emissions increase due to VMT growth.

The 2013 Ozone Attainment Plan was approved by ARB on November 21, 2013 and submitted to EPA as a revision to the SIP on December 31, 2013. EPA found the motor vehicle emissions budgets in the Plan for the 1997 8-hour ozone NAAQS to be adequate for attainment goals. The finding became effective on August 25, 2014. EPA proposed to approve and promulgate the Sacramento Region SIP for 1997 8-hour Ozone Standard. The comment period for the proposed rule ended November 14, 2014 (ARB 2014c).

The 2013 Ozone Attainment Plan contains regional and local control measures that address both ROG and NO_X. A single NO_X pollutant strategy is not appropriate because, even though ROG (and volatile organic compound) measures are not as effective as NO_X control measures, ROG-reducing measures still provide needed reductions in ozone formation (Sacramento Region Air Districts 2013:1-5).

HAZARDOUS AIR POLLUTANTS

EPA and 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 TACs to limit emissions. These, in conjunction with additional rules set forth by PCAPCD, described below in Subsection 10.2.3, Local, establish the regulatory framework for TACs.

EPA has programs for identifying and regulating HAPs. Title III of the CAA directed EPA to promulgate national emissions standards for HAPs (NESHAP). The national emissions standards for HAPs may differ for major sources and 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 ways. First, EPA has 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. For area sources, the standards may be different, based on generally available control technology. Second, EPA also has health risk–based emissions standards, where deemed necessary, to address risks remaining after implementation of the technology-based NESHAP standards.

The CAA 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,

the CAA required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

10.2.2 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). California law authorizes ARB to set ambient (outdoor) air pollution standards (California Health and Safety Code section 39606) in consideration of public health, safety, and welfare (California Ambient Air Quality Standards [CAAQS] (Table 10-3).

Criteria Air Pollutants

ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned CAPs. 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 area-wide 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, including diesel PM, and adopted EPA's list of HAPs as 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 standard exists for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold standard. If no safe threshold standard exists, the measure must incorporate best available control technology for toxics to minimize emissions.

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). 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). 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 substantially 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.

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.

10.2.3 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. PCAPCD's clean air strategy 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 in the Placer County are subject to adopted PCAPCD rules and regulations in effect at the time of construction. Specific rules applicable to the construction of the proposed project may include but are not limited to the following:

- PCAPCD Rule 202—Visible Emissions,
- PCAPCD Rule 217—Cutback and Emulsified Asphalt Paving Materials,
- PCAPCD Rule 218—Application of Architectural Coatings,
- PCAPCD Rule 228—Fugitive Dust, and
- PCAPCD Rule 501—Permit Requirements.

Toxic Air Contaminants

At the local level, air districts may adopt and enforce ARB's airborne toxic control measures. Under PCAPCD Rule 501 ("Permit Requirements") and PCAPCD Rule 502 ("New Source Review"), all sources that possess the potential to emit TACs are required to obtain permits from the district. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new source review standards and air toxics control measures. PCAPCD limits emissions and public exposure to TACs through a number of programs.

Sources that require a permit are analyzed by PCAPCD (e.g., health risk assessment) based on their potential to emit TACs. If it is determined that the project will emit toxics in excess of a PCAPCD-established threshold standard of significance for TACs (i.e., 10 in one million or a hazard index greater than 1.0), sources have to implement the Best Available Control Technology (BACT) for TACs to reduce emissions. If a source cannot reduce the risk below the threshold standard of significance even after the BACT has been implemented, the air district will deny the permit required by the source. This helps to prevent new problems and reduces emissions from existing older sources by requiring them to apply new technology when retrofitting with respect to TACs.

Odors

PCAPCD and other air districts in California have 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, PCAPCD has no rules or standards related to odor emissions other than their nuisance rules:

- **PCAPCD 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 the air districts.

10.3 IMPACTS

10.3.1 Significance Criteria

Based on the Placer County CEQA checklist and Appendix G of the State CEQA Guidelines, the proposed project would result in a potentially significant impact on air quality if it would:

- 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;
- result in a cumulatively considerable net increase of any CAP 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 criteria established by the applicable air district may be relied on to make the above determinations. Thus, as identified by PCAPCD, an air quality impact also is considered significant if implementation of the proposed project would result in:

- a net increase in short-term construction-related or long-term operation-related (regional) emissions of ROG, NO_X, or PM_{10} that exceed *the project-level threshold* of 82 pounds per day (lbs/day) (PCAPCD 2012:2-2). The thresholds of 82 lbs/day are based on the limit of 15 tons per year that is mandated for permitting of individual stationary sources of emissions (e.g., factories, industrial facilities, gasoline stations) by the New Source Review program (PCAPCD Rule 502). One objective of the New Source Review program is to ensure that air quality is not significantly degraded from the addition of new and modified industrial sources (PCAPCD 2012:2-2 and 2-3). Therefore, Placer County considers the thresholds of 82 lbs/day to represent the allowable incremental contribution of a land use development project while still progressing toward overall attainment within Placer County; and/or
- exposure of sensitive receptors to TAC emissions that 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 (PCAPCD 2012:E-3).

10.3.2 Methods and Assumptions

POLICIES PROPOSED IN THE SPECIFIC PLAN THAT COULD AFFECT PROJECT IMPACTS

The following policies from *The Village at Squaw Valley Specific Plan* (Squaw Valley Real Estate, LLC 2015) are applicable to the evaluation of air quality effects:

- **Policy AQ-1**: No wood-burning stoves or fireplaces shall be installed in resort-residential or lodging units.
- **Policy AQ-2**: Outdoor backyard and patio area cooking appliances and grills shall use natural gas or propane.

- **Policy AQ-3**: All plan construction and development shall comply with the Placer County Air Pollution Control District rules and regulations.

Additionally, Chapter 8, "Implementation," of the VSVSP includes the following requirement (Squaw Valley Real Estate, LLC 2015) that is applicable to the evaluation of air quality effects:

> The Draft EIR analyzed a project buildout scenario which assumed that no more than 20 percent of the project would be developed in any single year. Each application for project entitlements shall include a projected timeline for project construction activities, including demolition, site preparation, grading, paving, building construction and architectural coatings. This inventory shall include the projections for construction of any other VSVSP projects that would involve construction activities that are foreseeable to occur concurrent with the project for which the application is submitted, including approved Tentative Small-Lot Subdivision Maps that have not recorded but remain within the valid exercise period and any approved projects not requiring a Small-Lot Tentative Map that are within the valid exercise period. If the total amount of construction in any construction year would exceed 20 percent of the total VSVSP buildout, then the application shall be accompanied by air quality and greenhouse gas analyses to determine if emissions would exceed applicable thresholds in any of the construction years of the project application. If the thresholds are exceeded, additional CEQA review may be required.

IMPACT ANALYSIS METHODOLOGY

Construction

Short-term construction-related emissions of CAPs and precursors were calculated using the California Emissions Estimator Model (CalEEMod) Version 2013.2 computer program (SCAQMD 2013), as recommended by PCAPCD and other air districts in California. Modeling was based on project-specific information (e.g., size, amounts of demolition, area to be graded, area to be paved), 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 H.

Operations

Operational emissions of CAPs and precursors were estimated by evaluating a variety of emission sources and using different models. Mobile-source emissions were estimated using the emission factors provided in CalEEMod; an estimate of project-generated vehicle trips and VMT developed as part of the analysis presented in Chapter 9, "Transportation and Circulation" (Fehr & Peers 2014); and the vehicle fleet mix observed along Squaw Valley Road during field work conducted as part of the noise analysis. The VMT attributed to the proposed project includes all project-generated VMT that would occur in Placer County (i.e., the jurisdiction of the PCAPCD) as well as any VMT that would take place in Truckee and along portions of Interstate 80 that are not in Placer County but are in the MCAB.

Also, development of the projected number of vehicle trips and VMT generated by the Specific Plan took into account the many policies in the Specific Plan that would result in less reliance on passenger vehicles. The VMT was calculated by Fehr & Peers, the traffic consultant that prepared the EIR's Transportation and Circulation (Chapter 9) analysis. As explained in Chapter 5, "Circulation and Parking," of the Specific Plan, the Specific Plan emphasizes pedestrian circulation by providing ample sidewalks and paths between key destinations, particularly between parking, ski operations, and trail heads. The Village would be designed to be compact and to provide lodging and related amenities, restaurants, ski facilities, and other recreational facilities in close proximity to one another so visitors could park once and access desired services and amenities on foot. In addition, the project provides easy access to ski facilities and other amenities by transit, through provision of new transit services as well as a new transit center. For instance, as stated in Policy CP-6, the Specific Plan would extend the existing Class I multi-purpose biking/walking trail along Squaw Valley Road to the west (it currently terminates northeast of the Village at the Squaw Valley Meadows

condos). Policy CP-5 states that a minimum of 25 percent of new shuttle services within the Olympic Valley would use alternative fuels. Also, providing more employee housing on the East Parcel would effectively shorten VMT associated with worker commute trips. Moreover, bike racks would be provided at main locations throughout the Village, as well as at the Shirley Canyon and Granite Chief Trailheads, and at all major lodging properties.

Emissions from propane combustion used for cooking, space heating, and water heating were estimated based on the consumption levels provided in a dry utilities study prepared for the Specific Plan (MacKay & Somps 2015:20). The emission factor for NO_X is consistent with emission rates for other propane-fueled boilers permitted in Olympic Valley (Finnell, pers. comm., 2014). The emission rates for ROG, PM_{10}, and $PM_{2.5}$ are from EPA's *Compilation of Air Pollutant Emission Factors* (AP42) (EPA 2008:1.5-3). The estimate of propane consumption takes into account the many energy efficiency-related policies listed in the Specific Plan, such as the use of Energy Star-rated windows, as required by Policy CC-13.

Emissions from consumer products and landscape maintenance activities were estimated using the applicable modules in CalEEMod (SCAQMD 2013). Winter-time emissions from the operation of snow removal equipment were estimated using the off-road equipment screen in the operations module of CalEEMod.

Operational emission from all sources were estimated for both full buildout of the Specific Plan, which could occur as early as 2037, and for an interim period when 20 percent of the proposed land uses become operational, which could occur as early as 2017. This scenario responds to the maximum potential project development of 20 percent of the overall project in a single year (see further discussion limiting project construction to 20 percent in any single year in Section 3.4.6, "Project Construction," as well as Section 10.3.2, above), and assumes that (although unlikely) this could occur in the first year of project development. The interim year of 2017 is examined because, for some pollutants such as NO_X, emission factors from motor vehicles would be highest in 2017 and would decline over time through the period when full buildout under the Specific Plan takes place.

Maximum daily emissions were estimated for both the peak summer day and the peak winter day, which have different operational characteristics such as different VMT levels, different levels of energy consumption, and the need to operate snow removal equipment. This analysis of operational emissions of CAPs and precursors is conservative because it assumes all new VMT emissions from the project as opposed to potentially relocated emissions. Specifically, it is likely that some portion of project-related vehicle trips and other emissions-generating activities would replace similar activities that would have already occurred in the MCAB. For instance, patrons who use the accommodations that would be developed under the Specific Plan may choose to use those accommodations in lieu of other existing opportunities in the Sierra (e.g., staying at Alpine Meadows, Truckee, or Tahoe City).

The potential for Specific Plan-generated traffic to result in concentrations of CO that exceed the NAAQS and CAAQS for this pollutant was evaluated using PCAPCD-recommended screening criteria.

Health risk from project-generated, construction- and operation-related emissions of TACs were assessed qualitatively. This assessment is based on the location from which construction- or operation-related TAC emissions would be generated by land uses developed under the Specific Plan relative to off-site sensitive receptors, as well as the duration during which TAC exposure would occur.

Similarly, the assessment of odor-related impacts is based on the types of odor sources associated with the land uses that would be developed under the Specific Plan and their location relative to off-site receptors.

10.3.3 Issues or Potential Impacts Not Discussed Further

All air quality issues addressed in the significance criteria are evaluated below.

10.3.4 Impact Analysis

Impact 10-1: Short-term, construction-generated emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$.

Short-term, construction-generated emissions would not exceed PCAPCD's significance threshold for ROG, NO_X, or PM_{10}. 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-related activities would result in project-generated emissions of ROG, NO_X, PM_{10} and $PM_{2.5}$ 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, and area of disturbance. Ozone precursor emissions of ROG and NO_X are associated primarily with exhaust from construction equipment, haul truck trips, and worker trips. ROG emissions are also generated during asphalt paving and the application of architectural coatings.

Construction of the land uses proposed under the Specific Plan would occur over a 25-year period, with some construction to begin no earlier than spring of 2016. While the rate in which various land uses and facilities are constructed would be market driven, it is not expected that any more than 20 percent of total construction activity would occur during any single year with a maximum 136 workers at any one time (see further discussion limiting project construction to 20 percent in any single year in Section 3.4.6, "Project Construction," as well as Section 10.3.2, above). Demolition, site preparation, grading, and paving activities would typically occur only during months when snow is unlikely to be present (approximately May 1 to October 15). However, interior work on buildings, including the indoor application of architectural coatings could potentially occur during all months of the year. Maximum daily construction emissions are summarized in Table 10-4. Refer to Appendix H for a detailed summary of the modeling assumptions, inputs, and outputs.

Table 10-4 Summary of Maximum Daily Emissions of Criteria Air Pollutants and Precursors Associated with Project Construction Activities

Construction Activity	ROG (lb/day)	NO_X (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Demolition	1.0	9.3	0.6	0.5
Site Preparation	1.1	11.0	1.6	1.1
Grading	1.1	11.0	2.1	1.2
Paving	1.4	15.0	0.3	0.2
Building Construction	0.6	4.5	3.6	1.3
Architectural Coatings	9.6	12.7	0.6	0.2
Total Maximum Daily Emissions	**32.2**	**53.3**	**8.9**	**4.5**
PCAPCD Thresholds of Significance	82	82	82	NA

Notes:
ROG = reactive organic gases
NO_X = oxides of nitrogen
PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less
$PM_{2.5}$ = 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 could occur if up to 20 percent of the land uses are under construction during any single year. See Appendix H for detail on model inputs, assumptions, and project specific modeling parameters.

Source: Modeling conducted by Ascent Environmental in 2014

As shown in Table 10-4, construction of the project would result in maximum unmitigated daily emissions of approximately 32 lbs/day of ROG, 53 lbs/day of NO_X, 9 lbs/day of PM_{10} and 5 lbs/day of $PM_{2.5}$.

Fugitive dust PM_{10} and $PM_{2.5}$ emissions would also be minimized due to implementation the dust control measures required by PCAPCD Rule 228, including measures that minimize track-out on to paved public roadways, limiting vehicle travel on unpaved surfaces to 15 mph, and stabilization of storage piles and disturbed areas. Short-term construction-generated emissions would not exceed PCAPCD's significance thresholds 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 lbs/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 $PM_{2.5}$.This impact would be **less than significant**.

Refer to Section 18.1, "Cumulative Impacts," for a discussion of whether construction-generated emissions of ozone precursors would be cumulatively significant.

Mitigation Measures

No mitigation is required.

Impact 10-2: Long-term, operation-related (regional) emissions of criteria air pollutants and precursors.

Operation of the Specific Plan under full buildout would result in days where the mass emissions of ROG and NO_X, ozone precursors, in Placer County and the MCAB would exceed the PCAPCD-recommended mass emission threshold of 82 lb/day. Thus, long-term operational emissions of ROG and NO_X could conflict with the air quality planning efforts and contribute substantially to the nonattainment status of Placer County with respect to the NAAQS and CAAQS for ozone. This would be a **significant** impact.

Mobile-source emissions of CAPs and precursors under the proposed project would result from visitor trips, employee commute trips, and other associated vehicle trips (e.g., deliveries of supplies, maintenance vehicles). Table 10-5 summarizes the trip generation and VMT estimates for both the peak winter and peak summer days under both 20 percent of buildout in first year scenario (i.e., worst case near term emissions scenario) and full buildout of the Specific Plan. Upon full buildout of the Specific Plan, which would occur no earlier than 2037, the project would generate up to 2,821 trips per day and 85,398 VMT in Placer County and/or the MCAB during the peak day of the winter season and up to 8,410 trips per day and 172,168 VMT in Placer County and/or the MCAB during the peak summer season day. (According to the analysis presented in Chapter 9, "Transportation and Circulation," another 86,912 VMT would be generated by the project on a peak summer day that would occur outside of this area but this portion of VMT would be split among areas of Nevada, El Dorado County, and counties in the Sacramento and Bay Area regions [Fehr & Peers 2014]. Thus, mobile-source emissions associated with this portion of VMT would be split among multiple other air basins.)

Table 10-5 Summary of Maximum Daily Operational Emissions of Criteria Air Pollutants and Precursors During Peak Summer and Peak Winter Days at 20 Percent and Full Buildout

Emissions Source	ROG (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
20 Percent Buildout as Early as 2017				
Peak Summer Day [1]				
Vehicle Trips	45.6	30.4	4.7	2.1
Propane Consumption	1.7	3.9	0.3	0.3
Consumer Products	7.4	0.0	0.0	0.0
Architectural Coatings [2]	2.8	0.0	0.0	0.0

Table 10-5 Summary of Maximum Daily Operational Emissions of Criteria Air Pollutants and Precursors During Peak Summer and Peak Winter Days at 20 Percent and Full Buildout

Emissions Source	ROG (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Landscaping Equipment	0.4	0.2	0.1	0.1
Total for Summer at 20 Percent Buildout	**57.8**	**34.5**	**5.1**	**2.5**
Peak Winter Day				
Vehicle Trips	27.7	16.9	2.3	1.1
Propane Consumption	3.6	8.2	0.7	0.7
Consumer Products	7.4	0.0	0.0	0.0
Architectural Coatings [2]	2.8	0.0	0.0	0.0
Landscaping Equipment	NA	NA	NA	NA
Snow Removal	0.1	1.1	0.1	0.1
Total for Winter at 20 Percent Buildout	**41.7**	**26.2**	**3.1**	**2.6**
Full Buildout as Early as 2037				
Peak Summer Day[1]				
Vehicle Trips	118.9	62.6	22.7	10.0
Propane Consumption	8.5	19.3	1.7	1.7
Consumer Products	37.0	0.0	0.0	0.0
Architectural Coatings [2]	13.9	0.0	0.0	0.0
Landscaping Equipment	2.0	0.8	0.4	0.4
Total for Summer at Full Buildout	**180.2**	**82.7**	**24.7**	**12.1**
Peak Winter Day				
Vehicle Trips	72.8	34.3	11.3	5.0
Propane Consumption	18.1	41.2	3.6	3.6
Consumer Products	37.0	0.0	0.0	0.0
Architectural Coatings [2]	13.9	0.0	0.0	0.0
Landscaping Equipment	NA	NA	NA	NA
Snow Removal	0.4	2.5	0.1	0.1
Total for Winter at Full Buildout	**142.1**	**78.0**	**15.0**	**8.7**
PCAPCD Thresholds of Significance	**82**	**82**	**82**	**NA**

Notes: See Appendix H for detail on model inputs, assumptions, and project specific modeling parameters.

[1] Snow removal and associated emissions would not occur during the summer.

[2] Including emissions from architectural coatings in the total maximum daily emissions estimates is conservative because it is unlikely that such maintenance activities would occur during peak activity days while the proposed land uses would be operating at full capacity. The types of land uses proposed by the Specific Plan typically experience seasonal periods of low occupancy and it is most likely that painting, like other periodic maintenance activities, would be performed during such periods of low occupancy (i.e., the shoulder season).

ROG = reactive organic gases
NO_X = oxides of nitrogen
PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less
$PM_{2.5}$ = 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

Source: Modeling and calculations conducted by Ascent Environmental in 2015

Other operational sources of emissions would include propane- and/or natural gas fueled equipment used for space and water heating, and landscaping equipment such as mowers and leaf blowers. The application of architectural coatings, as part of regular maintenance, and the use of various consumer products such as cleaning chemicals would also generate emissions of ROG. Snow removal equipment associated with the project (i.e., snow plows, front loaders) used during the winter season would also generate emissions of CAPs and precursors. All of the emissions from these sources would be generated in Placer County and the MCAB.

Given that up to 20 percent of the Specific Plan could be constructed in a single year, assuming that this peak construction occurs in the first year of project when vehicle emission rates are higher than subsequent years (i.e., future legally mandated emission reduction measures are not in place), approximately 20 percent of these trip and VMT levels could occur on the peak day of the respective season as early as 2017. Table 10-5 summarizes the modeled project-generated, operation-related emissions of CAPs and ozone precursors for the peak summer and peak winter days in 2017 (with maximum 20 percent possible buildout) and 2037 (full project buildout).

As shown in Table 10-5, operation-related activities would result in project-generated daily unmitigated emissions of PM_{10} and $PM_{2.5}$ that are less than the PCAPCD-recommended thresholds of significance, both at partial and full buildout. Maximum daily emissions of ROG and NO_X, ozone precursors, however, would exceed PCAPCD's recommended thresholds during the peak summer day of operations upon full buildout of the Specific Plan (but not at 20 percent of buildout). Maximum daily emissions of ROG would also exceed PCAPCD's recommended threshold during the peak winter day of operations. According to the most recent update of PCAPCD's adopted Ozone Attainment Plan, limiting both ROG and NO_X in the Sacramento Federal Ozone Nonattainment Area will be necessary to ensure the NAAQS and CAAQS for ozone are maintained. Thus, ROG and NO_X emissions generated under full buildout of the Specific Plan could conflict with long-term ozone planning efforts and/or contribute substantially to a net increase in concentrations of ozone for which Placer County is in nonattainment. Therefore, this would be a **significant** impact.

Mitigation Measure 10-2: Implement an ongoing ROG and NO_X emissions review and reduction program.

Mitigation measures for reducing operational emissions of ozone precursors were developed using PCAPCD guidance (PCAPCD 2012:C-1 through C-2) and mitigation guidance published by the California Air Pollution Control Officers Association (CAPCOA 2010) and the California Attorney General's Office (2010). The Lake Tahoe Sustainability Collaborative's *Sustainability Action Plan* was also reviewed for mitigation options as it includes multiple emission reduction measures that are well-suited to the climate and development patterns in the Sierra Nevada (Lake Tahoe Sustainability Collaborative 2013:4-1 through 4-37).

Prior to recordation of each Small Lot Final Map, the project applicant shall prepare, to the satisfaction of Placer County Planning Services Division and PCAPCD, a chart or table with supporting analysis, which demonstrates that construction and operation of the proposed phase, combined with emissions from all past approved phases, will not result in ROG or NO_x emissions in excess of 82 lbs/day. Compliance with this threshold may be achieved through project design and/or other "on-site" measures, which may include any of the project-level reduction measures listed below. Alternatively, the project applicant may demonstrate compliance with this mitigation measure, partially or wholly, through off-site measures (i.e., emission reductions not directly associated with the proposed project but funded/implemented by the applicant, such as reducing emissions associated with ski operations) and/or purchase of offset credits identified below.

Placer County Planning Services Division shall maintain a file for the charts to provide future applicants with the historical emissions record and approved tracking methodology.

The project applicant shall be responsible for the funding and implementation of all identified reduction measures. The ROG and NO_X reduction benefits achieved by all measures must occur during the ozone season (May through October). The method used to quantify the reduction or offset amount achieved by each measure must be approved by the County and PCAPCD.

Subsequent to the implementation of all selected reduction measures, the project applicant shall evaluate and report the effectiveness of the measures annually to the County and PCAPCD to verify that the suite of measures result in the combined reduction in ROG and NO_X that was expected. This annual reporting shall be completed and submitted to the County and PCAPCD within 30 days of the end of each ozone season. If it is determined that the effectiveness of reduction measures has been overestimated, then additional reduction measures must be implemented. Similarly, if it can be verified that reduction measures achieve better than anticipated results, or previous emission estimates were above actual emission levels, the overall emission reduction approach can be adjusted accordingly.

Types of reduction and offset measures implemented by the project applicant may include, but are not limited to, the measures listed below, so long as the combination of selected measures results in calculated emissions below the target threshold. Note that not all of these measures need to be implemented; rather, the project applicant will be required to implement a combination of those measures needed to reduce ROG and NO_X emissions below the 82 lbs/day threshold:

TRIP EMISSION REDUCTION MEASURES

- Provide free or discounted transportation service between the Village and the Amtrak station in Truckee to all overnight visitors who arrive by train. This may be implemented in coordination with a local taxi service, the North Tahoe-Truckee Free Ski Shuttle, or other public or private shuttle service.
- Offer discounted overnight accommodations, meals, activities, or other incentives to visitors who arrive by train to the Amtrak station in Truckee and/or to groups who arrive by bus or some other emissions-efficient vehicle type.
- Provide preferential parking to alternatively-powered vehicles, including electric cars, natural gas vehicles, and hydrogen fuel cell vehicles.
- Provide charging stations for electric vehicles.
- Designate a location for the future installation of a hydrogen fueling station in the event that hydrogen fuel vehicles become readily available and widely used.
- Offer free, shared, or discount rental bicycles to all visitors staying in the hotel or resort residential units.
- Provide shuttle service to other key destinations in the region (e.g., North/West Shore of Lake Tahoe, casinos, Truckee) to serve guests who want to tour regional offerings.
- Provide a covered bicycle parking area near entrance of all commercial establishments.
- Provide parking for, and subsidize a car-sharing service for resort employees and/or patrons.
- Provide “end-of-trip” facilities for employees who bike to their work sites from outside of Olympic Valley including showers, secure weather-protected bicycle lockers, storage lockers for other gear, and changing spaces. This measure is consistent with measure TRT-5 in guidance published by the California Air Pollution Control Officers Association (CAPCOA 2010:234-236).
- Provide free transit passes or reimburse the transit costs of employees who commute from outside Olympic Valley using Tahoe Area Regional Transit or another transit service. This measure is consistent with measure TRT-4 in CAPCOA’s guidance (CAPCOA 2010:230-233).
- Provide adequate secure weather-protected bicycle lockers or storage area for employees living at the East Parcel. The number of lockers or size of the storage area shall be adequate to meet the demand of employee residents.

- Provide virtual and/or real bulletin boards in common areas of employee housing units and other areas where employees congregate to foster the development of carpools and other ride sharing opportunities.

AREA-SOURCE MEASURES

- Prohibit diesel trucks from idling more than 5 minutes at all loading docks, including those at the East Parcel. Prior to the issuance of an Improvement/Grading Plan, the project applicant shall show on the submitted building elevations that all truck loading and unloading docks will be equipped with one 110/208 volt power outlet for every two dock doors. Diesel trucks idling for more than 5 minutes shall be required to connect to the 110/208 volt power to run any auxiliary equipment. A requirement for minimum 2 foot by 3 foot signage at loading docks that indicates "Diesel engine Idling limited to a maximum of 5 minutes" shall be included with the submittal of building plans. This measure is recommended in PCAPCD's *CEQA Handbook* (PCAPCD 2012:C-1) and is also consistent with measure VT-1 in the CAPCOA guide (CAPCOA 2010:300-303).

- On- and off-road service and maintenance vehicles used by the operators of land uses developed under the Specific Plan, including landscape maintenance vehicles, housekeeping vehicles, and maintenance vehicles, shall be electric, electric-hybrids, or alternatively fueled.

- Electrify new and existing well pumps.

- Design and engineer new and remodeled resort-residential, commercial, institutional, and civic construction to exceed 2014 Title 24 State energy-efficiency requirements by a designated percentage. This measure is consistent with Specific Plan Policy CC-1, which encourages that 2014 Title 24 standards be exceeded by 15 percent.

- Design all new resort-residential buildings and major renovations to meet or exceed the guidelines for the California Energy Star Certified Homes Program or similar accreditation. The Energy Star Certified Homes Program is a joint program of EPA and the Department of Energy. The program establishes criteria for energy efficiency for household products and labels energy efficient products with the Energy Star seal. Homes and residential buildings can be qualified as Energy Star homes as well if they meet efficiency standards. In California, Energy Star homes must use at least 15 percent less energy than Title 24 regulations, pass the California Energy Star Homes Quality Insulation Installation Thermal Bypass Checklist Procedures, have Energy Star windows, and have minimal duct leakage. This measure is consistent with Specific Plan Policy CC-2, which encourages this performance standard.

- Only include outdoor cooking grills or outdoor cooking appliances that are fueled by propane or natural gas, or are electrified. No charcoal grills shall be allowed. This measure is recommended in PCAPCD's *CEQA Handbook* (PCAPCD 2012:C-1 and C-2).

- Install all pools with integrated insulation that has a verified insulation R-value that exceeds what is required by the building code at the time of construction, or insulate walls and floor of swimming pools with insulation that has a verified insulation R-value that exceeds what is required by the building code at the time of construction.

- Incorporate solar heating into pool heating systems.

- Cover outdoor pools with a cover designed to absorb heat from the sun when pools are not open (i.e., a transparent or bubble cover).

- Equip all heated swimming pools with energy efficient pumps and automatic covers for maintaining water temperature when not in use. This measure is recommended by the California Attorney General's Office (2010).

- Install into each dwelling unit Energy Star-rated programmable thermostats that can be controlled remotely (e.g., via internet and/or phone) by property owners/overnight patrons and building management/maintenance staff. The system should allow property management staff to monitor and adjust the thermostats when the dwelling units are unoccupied. Develop a system of default interior temperatures when dwelling units are unoccupied in order to prevent freezing water pipes and maximize heating and cooling efficiently throughout the occupied portions of the multi-story, multi-unit buildings.

- Install an occupancy-sensing energy management system into residential units. This occupancy sensing system may consist of a master keycard unit that relies on a key card's presence in an electronic sensor or a Passive Infra-Red System to positively determine room occupancy status. The system must prevent the use of all light fixtures, exhaust fans, ceiling fans, and televisions when the unit is unoccupied.

- Install Energy Star-rated ceiling fans in residential units.

- Install on-demand (tankless or instantaneous) hot water heaters in residential units and commercial areas that are not served by a central water boiler in the building. Install systems that recirculate hot water.

- Renovate off-site buildings to make them more energy efficient, particularly regarding their levels of propane consumption for space and water heating.

- Prohibit the application of ROG-emitting paint or other architectural coatings as part of regular ongoing maintenance during peak activity periods when ROG emissions from other sources are the highest.

OFFSET MEASURES

- Establish mitigation off-site within the portion of Placer County that is within the MCAB by participating in an off-site mitigation program, coordinated through PCAPCD. Examples include, but are not limited to retrofitting, repowering, or replacing heavy duty engines from mobile sources (e.g., busses, construction equipment, on-road haulers, boilers, ski lift equipment, grooming equipment); or other programs that the project proponent may propose to reduce emissions.

- Participate in PCAPCD's Off-site Mitigation Program by paying the equivalent amount of fees for the project's contribution of ROG and NO_X that exceeds the 82 lbs/day. The applicable fee rates changes over time. At the time of writing this EIR, the fee rate is $17,720 per ton emitted during the ozone season. The actual amount to be paid shall be determined, and satisfied per current California Air Resource Board guidelines, at the time of recordation of the Final Map (residential projects), or issuance of a Building Permit (non-residential projects).

CONSTRUCTION MEASURES

- Cease or substantially limit ROG- and NO_X–generating construction activity during peak operations (i.e., peak occupancy periods) of buildings and facilities that are already built and operational under the Specific Plan.

- The prime contractor shall provide a plan for approval by PCAPCD demonstrating that the heavy-duty (50 horsepower [hp] or more) land-based, off-road vehicles to be used for project-related demolition and construction activity, including owned, leased, and subcontractor equipment, shall achieve a project wide fleet-average percent reduction in ROG and/or NO_X compared to the most current ARB fleet average that exists at the time of construction. Acceptable options for reducing emissions may include use of late-model engines, low-emission diesel products, alternative fuels (such as LNG/CNG/biodiesel), engine retrofit technology, after-treatment products, and/or other options as they become available. The prime contract shall use SMAQMD's Construction Mitigation Calculator (SMAQMD 2012), which is approved by PCAPCD, to demonstrate that its selected equipment fleet achieves these reductions.

- During construction the contractors shall utilize existing power sources (e.g., power poles) or natural gas- or propane-fueled generators that emit less ROG and NO_X rather than temporary diesel power generators.

- Signs shall be posted in the designated queuing areas of the construction site to remind off-road equipment operators that idling shall be limited to a maximum of 5 minutes.

Significance after Mitigation

Because implementation of Mitigation Measure 10-2 would require a program to ensure that the net maximum daily operational levels of ROG and NO_X emissions in combination with any project-related construction emissions do not exceed PCAPCD's thresholds of 82 lbs/day, the project would not result in emission levels that would violate or substantially contribute to a violation of the ambient air quality standards for ozone. Therefore, implementation of Mitigation Measure 10-2 would reduce this impact to **less-than-significant** level.

Impact 10-3: Mobile-source CO concentrations.

Though buildout of the Specific Plan would result in additional vehicle trips on the surrounding roadway network, project operation would not result in increases in traffic such that PCAPCD screening criteria for local CO emissions would be triggered. Therefore, the project would not result in increased concentrations of CO that would expose sensitive receptors to unhealthy levels. This impact would be **less than significant**.

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, schools, and childcare facilities. Thus, high local CO concentrations are considered to have a direct influence on the receptors they affect.

Dispersion modeling to determine 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 1997:4-7) or when the project will substantially worsen an already existing unacceptable peak-hour LOS (i.e., LOS E or F) at an intersection by 10 seconds or more when project-generated traffic is included (PCAPCD 2012:4-2 to 4-3). 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 1997:4-7). 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. Moreover, CO emissions from modern automobiles have been reduced to the point that CO hotspots are rarely created anymore, and only at large highly congested intersections (multi-lane highways with substantial congestion).

Based on the traffic study conducted for the project (see Table 9-21 in Chapter 9, "Transportation and Circulation"), none of the signalized intersections in the traffic analysis study area currently operate at LOS E or F during summer or winter, and buildout of the Specific Plan when added to this existing traffic would not result in any signalized intersections being reduced to LOS E or F. Thus, even though buildout of the Specific Plan 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. Furthermore, emissions rates for CO from on-road vehicles are anticipated to decrease as new model-year vehicles continue to replace older, higher CO-emitting vehicles. As a result, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 10-4: Exposure of sensitive receptors to TACs.

Construction activities would not result in substantial emissions of diesel PM, even during the most intense construction season, and would not take place in the same locations affecting the same off-site receptors in the plan area every construction season during the buildout period. TACs associated with long-term operations of the Specific Plan would also be intermittent and relatively low. Therefore, levels of TACs from project-related construction and operations would not result in an increase in health risk exposure at off-site sensitive receptors. This impact would be **less than significant**.

The exposure of sensitive receptors to TAC emissions from project-generated construction and operational sources are discussed separately below. The TAC that is the focus of the analysis is diesel PM because it is known that diesel PM would be emitted during project construction and operation. Although other TACs exist (e.g., benzene, 1,3-butadiene, hexavalent chromium, formaldehyde, methylene chloride), they are primarily associated with industrial operations and the VSVSP would not be a source of emissions for these TACs.

CONSTRUCTION

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, clearing, grading); paving; application of architectural coatings; on-road truck travel; and other miscellaneous activities. For construction activity, diesel PM is the primary TAC of concern. On-road diesel-powered haul trucks traveling to and from the construction area to deliver materials and equipment are less of a concern because they would not stay on the site for long durations.

Particulate exhaust emissions from diesel-fueled engines (i.e., diesel PM) was identified as a TAC by the ARB in 1998. The potential cancer risk from the inhalation of diesel PM, as discussed below, outweighs the potential for all other health impacts (i.e., non-cancer chronic risk, short-term acute risk) and health impacts from other TACs (ARB 2003), so diesel PM is the focus of this discussion. Based on the emission modeling conducted and presented in Table 10-4, above, maximum daily emissions of $PM_{2.5,}$ considered a surrogate for diesel PM, would not exceed 5 lbs/day during the most intense season of construction activity. Furthermore, even during the most intense year of construction, emissions of diesel PM would be generated from different locations in the plan area rather than a single location because different types of construction activities (e.g., demolition, site preparation, building construction) would not occur at the same place at the same time.

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 any exposed receptor. Thus, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period of time. According to OEHHA, HRAs, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70- or 30-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the proposed project (OEHHA 2012:11-3). Consequently, it is important to consider that the use of off-road heavy-duty diesel equipment would be limited to the periods of construction, for which most diesel-powered off-road equipment use would occur during the construction season (approximately May 1 to October 15) only during those years during the 25-year buildout period when new facilities are constructed.

Also important to consider is the proximity of nearby sensitive receptors and their occupancy characteristics. Studies show that diesel PM is highly dispersive (as an example, diesel PM concentrations decrease by 70 percent at 500 feet from the source) (Zhu et al. 2002), and receptors must be in close proximity to emission sources to result in the possibility of exposure to concentrations of concern. In most, although not all cases, receptors in and around the Plan Area would be 100-feet or more from the nearest construction activities (see locations of existing buildings relative to the VSVSP concept plan shown in Exhibits 3-5 and 3-6 in

Chapter 3, "Project Description"). Regarding occupancy characteristics, nearby dwelling units that may be inhabited by the residents on a long-term basis, or at least during the entire construction season, include some units in the existing Village, houses north of Squaw Valley Road, houses west of Granite Chief Road and near the Funitel, houses along Squaw Peak Road, and houses in the residential area that includes the streets of Christy Lane, Lanny Lane, Eric Way, and Sandy Way.

Other nearby land uses include commercial uses, and transient lodging where occupants generally do not reside longer than a typical weekend or week-long vacation stay. The nearest sensitive receptors to the East Parcel include single family homes along Trail's End and the east end of Indian Trail Road, some of which are as close as 75 feet. Given the locations of potential receptors relative to potential diesel PM emission sources, the transient nature of most occupants, and the temporary nature of construction activities within specific locations in the Specific Plan area (i.e., construction does not occur year round and does not occur in any one part of the plan area during the entire 25-year buildout period), the concentrations and durations of any TAC exposure that might occur would be very limited.

Moreover, implementation of Mitigation Measure 11-1a, provided in Chapter 11, "Noise," which requires construction staging areas to be located as far as possible from sensitive receptors, would have the added benefit of further limiting the amount of time diesel construction equipment operates near sensitive receptors.

Therefore, considering the relatively low mass of diesel PM emissions that would be generated during even the most intense season of construction, the relatively short duration of construction activities seasonally and within specific portions of the plan area, the distance to the nearest off-site sensitive receptors, the transient occupancy characteristics of most sensitive receptors, and the highly dispersive properties of diesel PM, construction-related TAC emissions would not expose sensitive receptors to an incremental increase in cancer risk that exceeds 10 in one million or a hazard index greater than 1.0.

LONG-TERM OPERATION (OFF-SITE IMPACTS)

The proposed project would include the long-term operation of sources of diesel PM, including diesel-powered delivery trucks and diesel-powered snow removal equipment. Emergency backup generators for project buildings would likely be fueled by propane or natural gas, and would operate only for brief periods of time. Thus, there would be limited types of diesel PM-generating activities in the Village and at the East Parcel. It is anticipated that shipping and receiving generated by the proposed project would result in not more than ten additional diesel-powered trucks accessing the plan area on any given day.

However, delivery trucks typically would not leave their engines running for an extended length of time when on-site given that they are required to limit idling time to 5 minutes by the California airborne toxics control measure incorporated in Title 13, Section 2485 of CCR. Any backup diesel generators (if diesel is used for any generators rather than propane or natural gas) would require Authority to Construct permits from the PCAPCD, and backup generators would only be operated during power failures and for several minutes to a few hours during periodic testing. Snow removal equipment would only be operated after heavy snows and this equipment typically does not operate in a single location for an extended period of time. Given that the level of diesel PM-generating activity on the project site would be relatively low, that none of these diesel PM sources would operate for extended periods of time, the highly dispersive properties of diesel PM, and the transient occupancy at most sensitive receptor locations as identified above, operation-related TAC emissions would not expose sensitive receptors to an incremental increase in cancer risk that exceeds 10 in one million or a hazard index greater than 1.0.

In summary, project-related construction and operational activities would not expose nearby sensitive receptors to incremental increases in cancer, chronic, and acute risk that exceed applicable thresholds. Therefore, the levels of health risk exposure to visitors, residents, and workers on or near the project site would be **less than significant**.

Also, research of diesel PM generated by freeway traffic (i.e., on-road vehicles) indicates that vegetation, particularly fine-needle tree species, were able to remove particulate from the air (Fuller et al. 2009; Sacramento-Emigrant Trails Health Effects Task Force and SMAQMD 2008), further minimizing this less-than-significant impact.

Mitigation Measures

No mitigation is required.

Impact 10-5: Exposure of sensitive receptors to odors.

The project would introduce new odor sources into the area (e.g., diesel exhaust emissions from delivery truck and snow removal equipment). However, these types of odor sources already operate in and near the plan area and do not result in odor complaints. Also, the Specific Plan would not locate land uses in close proximity to any existing odor sources. This impact would be **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.

Minor odors from the use of heavy duty diesel equipment and the laying of asphalt during project-related construction activities would be intermittent and temporary, and would dissipate rapidly from the source with an increase in distance. While facilities would be constructed intermittently over a 25-year buildout period, these types of odor-generating activities would not occur at any single location, or within close proximity to off-site receptors, for an extended period of time. Moreover, asphalt paving and use of diesel equipment would be most intense during summer months when occupation rates in Squaw Valley are generally lower. During peak summer occupancy periods (e.g., 4th of July weekend), it is likely that use of heavy duty diesel equipment and paving activity would not occur, or would be very limited.

Operation of the land uses proposed under the Specific Plan would include diesel-fueled delivery trucks hauling materials to and from the condo units, hotel, and restaurants, as well as over-snow vehicles (i.e., snow mobiles, snow cats), and snow plows; however, these types of sources are not different from those that currently deliver materials to existing land uses in Squaw Valley and support resort operations. Operations under the Specific Plan would also include restaurant kitchens but any odors potentially generated by the kitchens are not typically considered to be objectionable and are also not different from the restaurant kitchens currently in Squaw Valley. Also, facilities developed under the Specific Plan would be subject to PCAPCD Rule 205 (Nuisance) regarding the control of nuisances, including odors.

Furthermore, implementation of the proposed project would not locate people in proximity to exiting odor sources. There are no odor sources near the project site, such as landfills or wastewater treatment facilities that have resulted in odor complaints by existing residents and workers in the plan area. Wastewater generated in Squaw Valley is conveyed approximately 14 miles away to a facility in Truckee that is operated by the Tahoe-Truckee Sanitation Agency. Because the proposed project would not result in the frequent exposure of a substantial number of members of the public to objectionable odors, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required.