2.3 Air Quality

This section of the Supplemental Environmental Impact Report (SEIR) includes a discussion of existing air quality conditions in the Alpine Community Plan Area (CPA), a summary of applicable air quality regulations, and an analysis on the potential short-term and long-term air quality impacts that could result from the Alpine Community Plan Update (CPU) (project). The air quality impact analysis is based on State CEQA Guidelines Appendix G and the County of San Diego *Guidelines for Determining Significance* for *Air Quality*. Mitigation measures are recommended as necessary to reduce significant air quality impacts to the extent feasible.

This section incorporates information and analysis from the 2011 General Plan EIR as it applies to the project. Section 1.3, Project Background, of this SEIR provides a background on both the 2011 General Plan EIR and the Forest Conservation Initiative (FCI) General Plan Amendment (GPA) EIR. The 2011 General Plan EIR and supporting Air Quality Technical Report analyzed the entirety of the Alpine CPA while the FCI GPA EIR provided an updated analysis of impacts of land use changes within the former FCI lands. Only the 2011 General Plan EIR will be used for analysis of air quality due to the outcome of litigation of the FCI GPA. Goals, Policies, and Mitigation Measures from the 2011 General Plan and General Plan EIR are relevant to this section and will be referenced throughout. The 2011 General Plan EIR provided a comprehensive assessment of the air pollutants in San Diego County (herein referred to as the County), regulatory environment, potential future impacts of the project, and mitigation. This section analyzes the increase in density compared to the approved densities within the 2011 General Plan EIR ("Prior EIR").

Table 2.3-1 summarizes the impact conclusions identified in this section. The "Prior EIR Conclusion" is from the 2011 General Plan EIR only.

Table 2.3-1. Air Quality Summary of Impacts

Issue Number	Issue Topic	Prior EIR Conclusion	Project Direct Impact(s)	Project Cumulative Impact(s)	Level of Significance after Mitigation
AQ-1	Air Quality Plans	Less than Significant	Potentially Significant	Potentially Significant	Significant and Unavoidable
AQ-2	Air Quality Violations	Significant and Unavoidable	Potentially Significant	Potentially Significant	Significant and Unavoidable
AQ-3	Sensitive Receptors	Significant and Unavoidable	Potentially Significant	Potentially Significant	Significant and Unavoidable
AQ-4	Odors	Less than Significant	Less than Significant	Less than Significant	Less than Significant

Comments received in response to the Notice of Preparation (NOP) related to air quality included recommendations regarding land use development activities to reduce vehicle miles traveled (VMT) and emissions from on-road vehicles, including improving walkways and bicycle infrastructure to encourage walkable and bikeable community centers. These are addressed in this section.

A copy of the NOP and associated comment letters are included in Appendix A of this SEIR. This section incorporates information and analyses from the prior EIR where applicable to the Alpine CPU (proposed project).

2.3.1 Existing Conditions

The Alpine CPA is located within the San Diego Air Basin (SDAB), which includes all of the County and is under the jurisdiction of the San Diego County Air Pollutant Control District (SDAPCD). The ambient concentrations of air pollutant emissions are determined by the amount of emissions released by the sources of air pollutants and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Therefore, existing air quality conditions in the Alpine CPA are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources, as discussed separately below.

2.3.1.1 Climate, Meteorology, and Topography

The SDAB is bounded by the Pacific Ocean to the west and high mountain ranges to the east, which inhibit the dispersal of pollutants to the east. The region has a Mediterranean climate characterized by warm dry summers and mild, wet winters. Rainfall in the SDAB averages approximately 9 to 14 inches annually. During fall, the region often experiences dry, warm easterly winds, called Santa Ana winds, which raise temperatures and lower humidity.

The climate of the SDAB, as with all Southern California, is largely dominated by the strength and position of the semi-permanent high-pressure system over the Pacific Ocean, known as the Pacific High. This high-pressure ridge over the West Coast often creates a pattern of late-night and early-morning low clouds, hazy afternoon sunshine, daytime onshore breezes, and little temperature variation year-round.

Two types of high-pressure cells called subsidence and radiation inversions affect air quality in the SDAB and trap the dispersion of pollutants, resulting in temporary degradation of air quality. Inversion layers occur often in the region during which air temperatures get warmer rather than cooler with increasing height. Inversion layers inhibit the dispersion of pollutants, resulting in a temporary degradation of air quality in the region.

The local meteorology of the Alpine CPA is represented by measurements recorded at the Western Regional Climate Center (WRCC) Alpine Station. The average annual precipitation is approximately 16.15 inches. January temperatures range from an average minimum of 42.4 degrees Fahrenheit (°F) to an average maximum of 65.4°F. July temperatures range from an average minimum of 60.1°F to an average maximum of 90.0°F (WRCC 2020a). The predominant wind direction is from the west (WRCC 2020b).

2.3.2 Air Quality Setting

Criteria Air Pollutants

Concentrations of ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead are used as indicators of ambient air quality conditions and are referred to as criteria air pollutants. Criteria air pollutants are air pollutants for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set by the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB).

A brief description of each criteria air pollutant's source types and health effects is provided below in Table 2.3-2. 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 criteria air pollutants associated with the project analysis.

Table 2.3-2. Sources and Health Effects of Criteria Air Pollutants

Pollutant	Sources	Acute Health Effects[1]	Chronic Health Effects[2]
Ozone	Secondary pollutant resulting from reaction of volatile organic compounds (VOC) and oxides of nitrogen (NO_X) in presence of sunlight. VOC 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	Incomplete combustion of fuels; motor vehicle exhaust	Headache, dizziness, fatigue, nausea, vomiting, death	Permanent heart and brain damage
Nitrogen dioxide	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)	Combustion devices (e.g., boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines), industrial processes, and fires	Irritation of upper respiratory tract, increased asthma symptoms, aggravation of existing heart disease leading to death	Chronic bronchitis, emphysema
Respirable particulate matter, Fine particulate matter	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 VOC	Breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, premature death	Alterations to the immune system, carcinogenesis

Pollutant	Sources	Acute Health Effects[1]	Chronic Health Effects[2]
Lead	Metal processing, piston-engine aircraft or other vehicles operating on leaded fuel	Reproductive/ developmental effects (fetuses and children)	Numerous effects including neurological, endocrine, and cardiovascular effects

Notes:
Source: EPA 2019
[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.

Ozone

Ground-level ozone is not emitted directly into the air but is created by chemical reactions between volatile organic compounds (VOC) and oxides of nitrogen (NO_X). This happens when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources chemically react in the presence of sunlight. Ozone at ground level is a harmful air pollutant because of its effects on people and the environment, and it is the main ingredient in smog (EPA 2016).

Acute health effects of ozone exposure include increased respiratory and pulmonary resistance, cough, pain, shortness of breath, and lung inflammation. Chronic health effects include permeability of respiratory epithelia and possibility of permanent lung impairment (EPA 2016). Emissions of the ozone precursors VOC and NO_X have decreased over the past two decades because of more stringent motor vehicle standards and cleaner burning fuels (CARB 2013).

Carbon Monoxide

CO is an odorless and invisible gas. It is a non-reactive pollutant that is a product of incomplete combustion of gasoline in automobile engines. CO is a localized pollutant, and the highest concentrations are found near the source. Ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic and are influenced by wind speed and atmospheric mixing. When inhaled at high concentrations, CO reduces the oxygen-carrying capacity of the blood, which, in turn, results in reduced oxygen reaching parts of the body.

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 geographical area may not be representative of the local sources of NO_X emissions (EPA 2019).

Acute health effects of exposure to NO_X includes coughing, difficulty breathing, vomiting, headache, eye irritation, chemical pneumonitis, or pulmonary edema, breathing abnormalities, cough, cyanosis, chest pain, rapid heartbeat, and death. Chronic health effects include chronic bronchitis and decreased lung function (EPA 2016).

Sulfur Dioxide

SO_2 is produced by such stationary sources as coal and oil combustion, steel mills, refineries, and pulp and paper mills as well as by the combustion of fuel-containing sulfur. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. SO_2 is a respiratory irritant with constriction of the bronchioles occurring with inhalation of SO_2 at 5 parts per million (ppm) or more (CDC 1978). On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high SO_2 concentrations may result in edema of the lungs or glottis and respiratory paralysis.

Particulate Matter

PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction activity, fires and natural windblown dust, and particulate matter formed in the atmosphere by reaction of gaseous precursors. $PM_{2.5}$ 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 (CARB 2013).

Acute health effects of PM_{10} exposure include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, and premature death. Chronic health effects include alterations to the immune system and carcinogenesis (EPA 2016).

Lead

Lead is a metal found naturally in the environment as well as in manufactured products and is a potent neurotoxin that can cause increased chances of cancer and non-cancer health effects for adults and children. Lead is known to negatively affect child brain development and function. The major sources of lead emissions have historically been mobile and industrial sources but can occur in dust created by demolition or deterioration of lead-based paint. Lead-based paint is present on buildings built before EPA's ban on the use of such paint in 1978. EPA also phased out leaded fuels as of December 1995 resulting in an 89 percent decline in lead emissions from mobile sources between 1980 and 2010 (EPA 2016; CARB 2001).

Criteria Air Pollutants from Wildfires

Wildfires have occurred and currently continue to occur in the project vicinity. Most recently, the Valley Fire occurred in September 2020, burning 16,390 acres of wildland in the Cleveland National Forest near the Alpine CPA (Cleveland National Forest 2020). Wildfires produce smoke, which is comprised of a complex mixture of carbon dioxide (CO_2), water vapor, CO, particulate matter, hydrocarbons and other organic chemicals, ROG, NO_X, and trace minerals. The primary criteria air pollutant of concern from smoke is $PM_{2.5}$ which can be transported a significant distance from the burn site and cause adverse health impacts because of their ability to penetrate more deeply into lung tissue. Although wildfire hazards are known to occur in and near the Alpine CPA, estimates of criteria pollutants from these hazards are not typically incorporated into plan-level air quality analyses because they occur intermittently, rather than year-to-year at a predictable frequency. The prevention of and preparation for wildfires, as addressed in Chapter 2.7, *Wildfire*, would play a key role in minimizing future criteria air pollutant emissions occurring within and near the Alpine CPA.

Monitoring Station Data and Attainment Designations

Air quality at a given location can be described by units of concentration that are generally expressed in ppm or micrograms per cubic meter. Both CARB and EPA use this type of monitoring data to designate areas according to their attainment status for criteria air pollutants (attainment designations are summarized below in Table 2.3-4). Table 2.3.4 of the 2011 General Plan EIR presents background ambient air quality concentrations within the SDAB from 2003 to 2007, which were the latest years of data available at the time of the environmental analysis. Since preparation of the 2011 General Plan EIR, CARB has current monitoring data available through 2018. Table 2.3-3 presents updated ambient air quality concentrations from the Alpine-Victoria Drive and El Cajon-Lexington Elementary School stations from the three most recent years of data available at the time of this writing. The Alpine-Victoria Drive station, which is within the Alpine CPA, monitors ozone, $PM_{2.5}$, and NO_2; the El Cajon-Lexington Elementary station (approximately 5 miles to the west of the Alpine CPA) is the closest station to the Alpine CPA that monitors PM_{10}. Because neither of these CARB stations monitor CO or SO_2, ambient concentrations of these pollutants were obtained from the EPA stations closest to the community of Alpine, both of which are within the City of El Cajon (533 First Street [Lexington Elementary] and 10537 Floyd Smith Drive) approximately 8 miles to the west of the Alpine CPA.

Table 2.3-3 indicates that the Alpine-Victoria Drive station has experienced frequent violations of the State and federal ozone standards. The Alpine-Victoria Drive station location is intended to monitor maximum ozone concentrations occurring downwind from the area of maximum precursor emissions. For this reason, the highest ozone levels within the air basin are recorded at this monitoring station each year (SDAPCD 2018a). Despite the growth in population, the SDAB has generally experienced improvements in ambient air quality; for instance, the number of exceedances of the State's 1-hour ozone standard has decreased from 18 days in 2007 to 2 days in 2018. The number of exceedances of the national 24-hour $PM_{2.5}$ standard has decreased from 11.4 expected days in 2007 to zero days during the 2016–2018 period (CARB 2018).

Since certification of the 2011 General Plan EIR, the SDAPCD adopted an update to the previous regional air quality strategy (RAQS) in 2016. The 2016 RAQS lays out the feasible emission control standards, actions, and regulations to bring the region into attainment for the National Ambient Air Quality Standard (NAAQS) and California Ambient Air Quality Standard (CAAQS), which are scientifically substantiated, numerical concentrations of criteria air pollutants considered to be protective of human health (SDAPCD 2016a, 2016b). As shown in Table 2.3-4, the SDAB is currently designated as a "nonattainment" area for the federal and State ozone standards and the State PM_{10} and $PM_{2.5}$ standards.

Table 2.3-3. Ambient Air Quality Concentrations for the Alpine CPA

Pollutant	Monitoring Year		
	2016	2017	2018
Ozone (Alpine-Victoria Drive station) [1]			
Maximum Concentration (1-hr/8-hr, ppm)	0.104/0.091	0.109/0.095	0.0102/0.082
Number of days State standard exceeded (1-hr/8-hr)	6/29	11/48	2/20
Number of days federal standard exceeded (8-hr)	13	26	7
Carbon Monoxide (El Cajon-Lexington Elementary and Floyd Smith Drive)[2]			
Maximum Concentration (1-hr/8-hr, ppm)	1.6/1.3	1.4/1.3	1.4/1.1
Number of days CAAQS exceeded (1-hr/8-hr)	0/0	0/0	0/0
Number of days NAAQS exceeded (1-hr/8-hr)	0/0	0/0	0/0
Respirable Particulate Matter (El Cajon-Lexington Elementary School and Floyd Smith Drive)			
Maximum Concentration (24-hr/annual average, µg/m^3)	43.0/--	50.0/23.0	43.0/23.0
Annual Average (µg/m^3)	--	23.0	23
Number of days CAAQS exceeded	0	0	0
Number of days NAAQS exceeded	--	0	0
Fine Particulate Matter (Alpine-Victoria Drive)			
Maximum concentration (24-hr/annual average, µg/m^3)	19.3/7.3	16.4/--	29.7/--
Number of days NAAQS exceeded	--	--	--
Nitrogen Dioxide (Alpine-Victoria Drive)			
Maximum concentration (1-hr, ppb)	33.0	28.0	31.0
Number of days NAAQS exceeded	0	0	0
Number of days CAAQS exceeded	0	0	0
Sulfur Dioxide (El Cajon-Lexington Elementary and Floyd Smith Drive)[2]			
Maximum concentration (1-hr/24-hr, ppb)	0.6/0.2	1.1/0.4	3.5/0.4
Number of days NAAQS exceeded (1-hr/24-hr)	0/0	0/0	0/0
Number of days CAAQS exceeded (1-hr/24-hr)	0/0	0/0	0/0

Notes: "—" = not available; ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter; CAAQS = California Ambient Air Quality Standard; EPA = United States Environmental Protection Agency; NAAQS = National Ambient Air Quality Standard; CARB = California Air Resource Board

Sources: CARB 2018, EPA 2018

[1] The Alpine-Victoria Drive monitoring station did not record Respirable Particulate Matter data for the years 2016 and 2017. PM_{10} data is instead presented from the El Cajon-Lexington Elementary School monitoring station, the next closest station to the community of Alpine.

[2] Site identification for these stations under the EPA Air Quality System are #060731022 and #060731018, respectively. The El Cajon-Floyd Smith station was closed in late 2016. Monitoring is now performed at Lexington Elementary School (533 First Street) only. 2016 data is from El Cajon-Floyd Smith; 2017 and 2018 data is from Lexington Elementary.

Table 2.3-4. Attainment Status Designations for San Diego County

Pollutant	National Ambient Air Quality Standard	California Ambient Air Quality Standard
Ozone (8-Hour)	Nonattainment	Nonattainment
Ozone (1-Hour)	Attainment[1]	Nonattainment
Carbon Monoxide	Attainment	Attainment
Respirable Particulate Matter	Unclassifiable[2]	Nonattainment
Fine Particulate Matter	Attainment	Nonattainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide[3]	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	No Federal Standard	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Visibility-reducing Particles	No Federal Standard	Unclassified

Source: San Diego County Air Pollution Control District [SDAPCD] no date

[1] The federal 1-hour standard of 12 parts per million (ppm) was in effect from 1979 through June 15, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in State Implementation Plans.

[2] At the time of designation, if the available data does not support a designation of attainment or nonattainment, the area is designated as unclassifiable.

As discussed above, the CAAQS and NAAQS represent concentration limits of criteria air pollutants needed to adequately protect human health and the environment. Existing violations of the ozone and particulate matter ambient air quality standards indicate that certain individuals exposed to this pollutant may experience certain health effects, including increased incidence of acute and chronic cardiovascular and respiratory ailments.

Toxic Air Contaminants

Toxic air contaminants (TACs) 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.

According to the *California Almanac of Emissions and Air Quality*, the majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being diesel particulate matter (diesel PM) (CARB 2013). 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, CARB has made preliminary concentration estimates based on a PM exposure method. This method uses the CARB 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.

Diesel PM poses the greatest health risk among these 10 TACs mentioned. Based on receptor modeling techniques, CARB estimated its health risk to be 420 excess cancer cases per million people in the SDAB in the year 2000 (CARB 2009). Overall, statewide emissions of diesel PM are forecasted to decline by 71 percent between 2000 and 2035 (CARB 2014).

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). The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals can 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 or a coffee roaster). It is important to also 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. Odor sources of concern include wastewater treatment plants, sanitary landfills, composting facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting operations, rendering plants, and food packaging plants. No odor sources of concern specified currently exist in or adjacent to the Alpine CPA.

Sensitive Receptors

Sensitive receptors are generally considered to include those land uses where exposure to pollutants could result in health-related risks to sensitive individuals, such as children or the elderly. Residential dwellings, schools, childcare facilities, hospitals, playgrounds, and similar facilities are of primary concern because of the presence of individuals particularly sensitive to pollutants and/or the potential for increase and prolonged exposure of individuals to pollutants.

Residential receptors are located throughout the Alpine CPA. The highest density housing (dwelling unit/acre) occurs in the Alpine Village (Subarea 6), adjacent to Interstate 8 (I-8). Nonresidential receptors in the Alpine CPA include various hospitals and schools. New residences, along with other sensitive receptors (e.g., schools, hospitals), would be constructed as part of the project and located throughout the CPA in each of the seven subareas. Table 2.3-5 summarizes the types of nonresidential receptors within the Alpine CPA.

2.3.3 Regulatory Framework

Air quality in the Alpine CPA is regulated through the efforts of various federal, State, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, planning, policymaking, education, and a variety of programs. The agencies responsible for improving the air quality within and in the vicinity of the Alpine CPA are described below.

Table 2.3-5. Nonresidential Sensitive Receptors within the Alpine CPA

Name	Type
Alpine Children's Academy	Daycare Center
Alpine Christian School	School
Alpine Community Day School	Daycare Center
Alpine Country Care Club	Resident Care Facility
Alpine Country Day School	Daycare Center
Alpine View Lodge	Resident Care Facility
Boulder Oaks Elementary	School
Creekside Early Learning Center	School
Joan MacQueen Middle School	School
Joyful Heart Learning Center	School
Kasitz Kastle	Resident Care Facility
Kinder Academy	Daycare Center
Little Pioneers Preschool	School
Los Coches Creek Middle School	School
Mountain View Learning Academy	School
Shadow Hills Elementary	School
The Heights Charter	School

2.3.3.1 Federal

Criteria Air Pollutants

At the federal level, the EPA implements national air quality programs. EPA air quality mandates are drawn primarily from the federal Clean Air Act (CAA), enacted in 1970. The most recent major amendments were made by Congress in 1990.

The CAA requires the EPA to establish NAAQS. As shown in Table 2.3-6, EPA has established NAAQS for the following criteria air pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead (CARB 2016). The primary standards protect public health and the secondary standards protect public welfare. The CAA also requires 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 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 reviews all state SIPs to determine whether they conform to the mandates of the CAA and its amendments and whether implementing them 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 the state fails to submit an approvable SIP, sanctions may be applied to transportation funding and stationary air pollution sources in the air basins.

Table 2.3-6. Federal and State Ambient Air Quality Standards

Criteria Pollutant	Averaging Time	CAAQS	NAAQS[1]	
			Primary	Secondary
Ozone	1-hour	0.09 ppm	None[2]	None[2]
	8–hour	0.070 ppm	0.070 ppm	0.070 ppm
Respirable Particulate Matter (PM_{10})	24-hour	50 μg/m³	150 μg/m³	150 μg/m³
	Annual Arithmetic Mean	20 μg/m³	None	None
Fine Particulate Matter ($PM_{2.5}$)	24-hour	None	35 μg/m³	35 μg/m³
	Annual Arithmetic Mean	12 μg/m³	12 μg/m³	15 μg/m³
Carbon Monoxide	8-hour	9.0 ppm	9 ppm	None
	1-hour	20 ppm	35 ppm	None
Nitrogen Dioxide	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	0.053 ppm
	1-hour	0.18 ppm	0.100 ppm	None
Sulfur Dioxide[3]	Annual Arithmetic Mean	None	0.030 ppm	None
	24-hour	0.04 ppm	0.14 ppm	None
	1-hour	0.25 ppm	0.075 ppm	None
Lead	30-day Average	1.5 μg/m³	None	None
	Calendar quarter	None	1.5 μg/m³	1.5 μg/m³
	Rolling 3-month average	None	0.15 μg/m³	0.15 μg/m³
Sulfates	24-hour	25 μg/m³	None	None
Visibility-reducing Particles	8-hour	--[4]	None	None
Hydrogen Sulfide	1-hour	0.03 ppm	None	None
Vinyl Chloride	24-hour	0.01 ppm	None	None

Source: CARB 2016

ppm= parts per million; μg/m³ = micrograms per cubic meter; NAAQS = National Ambient Air Quality Standard; CAAQS = California Ambient Air Quality Standard

[1] National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.

[2] The federal 1-hour standard of 12 parts per hundred million was in effect from 1979 through June 15, 2005. The revoked standard is referenced because it was employed for such a long period and is a benchmark for State Implementation Plans.

[3] The annual and 24-hour NAAQS for sulfur dioxide only apply for 1 year after designation of the new 1-hour standard to those areas that were previously in nonattainment for 24-hour and annual NAAQS.

[4] CAAQS for visibility-reducing particles is defined by an extinction coefficient of 0.23 per kilometer – visibility of 10 miles or more due to particles when relative humidity is less than 70 percent.

Toxic Air Contaminants and Hazardous Air Pollutants

Air quality regulations also focus on TACs (also known as hazardous air pollutants [HAPs] in federal regulations). In general, for those TACs that may cause cancer, all concentrations present some risk and there is no safe level of exposure. In other words, there is no threshold level below which adverse health impacts may not be expected to occur.

A wide range of sources, from industrial plants to motor vehicles, emit TACs. The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis or genetic

damage; or short-term acute affects such as eye watering, respiratory irritation (a cough), running nose, throat pain, and headaches.

For evaluation purposes, TACs are separated into carcinogens and non-carcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. This contrasts with criteria air pollutants, for which acceptable levels of exposure can be determined and for which ambient standards have been established. Cancer risk from TACs is expressed as excess cancer cases per one million exposed individuals, typically over a lifetime of exposure.

EPA regulates HAPs through its National Emission Standards for Hazardous Air Pollutants. The standards for a particular source category require the maximum degree of emission reduction that the EPA determines to be achievable, which is known as the Maximum Achievable Control Technology standards. These standards are authorized by Section 112 of the 1970 CAA and the regulations are published in Title 40 of the Code of Federal Regulations Parts 61 and 63.

Safer Affordable Fuel-Efficiency Vehicles Rule

In August 2019, EPA and the National Highway Traffic Safety Administration jointly published a notice of proposed rulemaking for Part One of the Safer Affordable Fuel-Efficient Vehicles Rule (SAFE Rule). The SAFE Rule proposes new and amended carbon dioxide (CO_2), Corporate Average Fuel Economy, and greenhouse gas (GHG) emissions standards for passenger cars and light trucks. Additionally, Part One of the SAFE Rule withdraws California's waiver, afforded under the CAA to set GHG and zero-emissions vehicle standards separate from the federal government. Part One of the SAFE Rule became effective in November 2019. In March 2020, Part Two of the SAFE Rule was issued which sets amended fuel economy and CO_2 standards for passenger cars and light trucks for model years 2021 through 2026. Part Two became effective 60 days after publication in the Federal Register. CARB has prepared off-model adjustment factors for the Emissions Factor model (EMFAC) to account for the impact of the SAFE Rule. These adjustment factors account for changes in pollutant estimates from mobile sources for NO_2, PM_{10} and $PM_{2.5}$, CO, and CO_2, and were applied within this analysis to account for the potential changes to estimated vehicle emissions as a result of the SAFE Rule.

2.3.3.2 State

CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required CARB to establish the CAAQS (Table 2.3-6).

Criteria Air Pollutants

CARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants (Table 2.3-6). 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 all local air districts in the State endeavor to attain and maintain the CAAQS by the earliest date practical. The CCAA specifies local air districts focus particular attention on reducing the emissions from transportation and area-wide emission sources. The CCAA also provides air districts with the authority to regulate indirect emission sources.

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 CARB to designate substances as TACs. Research, public participation, and scientific peer review are required before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and adopted EPA's list of HAPs as TACs. Most recently, diesel PM was added to CARB's list of TACs.

After a TAC is identified, CARB 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.

Stationary Sources

The Hot Spots Act requires 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.

Vehicular Sources

CARB has adopted diesel exhaust control measures and more stringent emissions standards for various transportation-related mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). Over time, the replacement of 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) have been reduced significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. The CARB Risk Reduction Plan provides the agency's proposal for comprehensive strategies to reduce diesel PM emissions in the State and was most recently updated in 2000. Through this Risk Reduction Plan, it is expected that diesel PM concentrations will be 85 percent less in 2020 in comparison to year 2000 (CARB 2000). It is anticipated that CARB will prepare an update to this Risk Reduction Plan that will identify if the diesel PM reduction goals have been achieved in 2020. Adopted regulations are also expected to continue to reduce formaldehyde emissions emitted by cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

Off-Road Construction Equipment

Any project using off-road vehicles that are diesel-powered, self-propelled, and 25 horsepower or greater, must be registered under the current owner with the CARB Diesel Off-Road Online Reporting System. Each registered vehicle is assigned an Equipment Identification Number which must be labeled on both sides of the vehicle, and all off-road vehicle fleets must demonstrate compliance with CARB emissions targets for off-road, diesel-powered vehicles. Further, CARB requires that off-road vehicles limit their unnecessary idling to five minutes unless idling is necessary to perform work (i.e. crane operation providing hydraulic power), the vehicle is being serviced, or the vehicle is in a queue waiting for work. Medium and large fleets must have a written idling policy that is made available to operators of the vehicles.

2.3.3.3 Local

San Diego County Air Pollution Control District

The SDAPCD is the local agency authorized to regulate air quality sources within the County and the SDAB to protect public health and welfare through the administration of federal and State air quality laws and policies. The clean air strategy of SDAPCD includes preparing plans and programs for the attainment of ambient air quality standards, adopting and enforcing rules and regulations, and issuing permits for stationary sources. In accordance with the CAA and CCAA, SDAPCD maintains the region's portion of the SIP and the RAQS for federal and State ozone standards. SDAPCD rules and regulations relevant to air quality in the Alpine CPA are described below.

Equipment Potentially Requiring Permits

SDAPCD's permitting system has been established to minimize air pollution by specifying operating and compliance requirements for stationary and portable sources that emit air contaminants. Rule 10, *Permits Required*, requires that any person building, erecting, altering, or replacing any article, machine, equipment, or other contrivance, the use of which may cause the issuance of air contaminants or the use of which may eliminate or reduce or control the issuance of air contaminants, shall first obtain written authorization for such construction from SDAPCD. Rule 11, *Exemptions*, lists exemptions for equipment or processes that have been determined to not emit significant amounts of air pollutants.

Visible Emissions

Rule 50, *Visible Emissions*, regulates the discharge of any air contaminant other than water vapor from construction and operational activities. This rule requires that persons or projects shall not discharge air emissions for more than three minutes in any period of 60 consecutive minutes, which is darker in shade than that designated as Number 1 on the Ringelmann Chart, and that no emissions are a degree greater than Number 1 on the Ringelmann Chart. This rule provides additional provisions for specific construction activities or uses.

Nuisance

Rule 51, *Nuisance*, requires that no person shall discharge from any source air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or which endanger the comfort, repose, health or safety of any persons.

Fugitive Dust Control

Rule 55, *Fugitive Dust Control*, regulates fugitive dust emissions associated with construction or demolition activities for projects in the County, including active operations, open storage piles, and inactive disturbed areas. Specifically, Rule 55 requires that:

- No construction or demolition activities will result in discharged of visible dust emissions beyond property lines; and
- Visible roadway dust as a result of active operations, spillage from transport trucks, erosion, or track-out/carry-out shall be minimized through track-out/carry-out and erosion control measures and shall be removed at the conclusion of each workday.

Architectural Coatings

Rule 67.0.1, *Architectural Coatings*, regulates the application of any architectural coatings within the County. As it relates to the Alpine CPU, this rule requires that the VOC content of coatings not exceed 50 grams per liter for flat coatings, 100 grams per liter for nonflat coatings, and 150 grams per liter for nonflat-high gloss coatings.

Asbestos

Rule 1206, *Asbestos Removal, Renovation, and Demolition* requires projects that propose renovation or demolition to conduct building surveys to determine if asbestos is present. Asbestos is a known human carcinogen and the primary route of exposure is through inhalation of asbestos fibers. As such, Rule 1206 incorporates the federal asbestos requirements identified in the EPA's *National Emission Standards for Hazardous Air Pollutants* and includes additional requirements to minimize exposure to asbestos fibers. If more than 100 square feet of asbestos-containing materials are identified and would be disturbed through demolition, projects must receive permits from SDAPCD to conduct related activities and ensure that all waste handling and disposal is in compliance with this rule.

County of San Diego

General Plan Policies

The 2011 General Plan Conservation and Open Space Element includes Goal COS-14 regarding land use development, which implements policies designed to reduce emissions of criteria air pollutants while protecting public health. This goal is supported by Policies COS-14.1 through COS-14.12, which include requirements for new development design and construction methods to minimize impacts to air quality; encourage future development to reduce vehicular trips by utilizing compact regional and community-level development patterns; encourage new development to reduce air pollution by incorporating a mixture of uses within villages and rural town centers that encourage people to walk, bicycle, or use public transit; minimize land use conflicts that expose people to significant amounts of air pollution; support transportation management programs that reduce the use of single-occupancy vehicles; and encourage the use of low emission vehicles and equipment to improve air quality and reduce GHG emissions.

Dust Control Measures

County Code Section 87.428 *Dust Control Measures*, requires all clearing and grading to be carried out with dust control measures adequate to prevent creation of a nuisance to persons or public or private property. Project design measures must be incorporated into all earth-disturbing activities to minimize the amount of particulate matter emissions from construction.

Alpine CPU Policies

Specific Alpine CPU goals and policies in the Land Use, Mobility, and Conservation and Open Space Elements are relevant to impacts and resources related to air quality are summarized below.

Land Use Element

Goal LU-6 states that the built environment should be in balance with the natural environment, scarce resources, natural hazards, and the unique local character. Policies LU-6.1, LU-6.2, LU-6.3, LU-6.4, LU-6.6, and LU-6.7 support this goal by describing how development should be designed, sited, and implemented. Policies LU-6.1 and LU-6.7 require the protection of natural resources and creation of open space. Policies LU-6.2, LU-6.3, LU-6.4, and LU-6.6 require that projects and subdivisions be designed to consolidate the

project footprint and use sustainable development practices (including incorporation of natural features) as well as maintain low density land uses in areas with sensitive natural resources.

Goal LU-7 recommends analyzing a Transfer of Development Rights (TDR) Pilot Program, and Policy LU-7.1 specifically implements a TDR Pilot Program in support of this goal. This program would promote environmental sustainability by directing density toward planned growth areas within village boundaries to reduce the generation of VMTs and GHG emissions.

Mobility Element

Goal M-1 works to support a multi-modal transportation system that serves the general convenience and safety of Alpine citizens and enhances the beauty and quality of the built environment. This goal would be supported by policies that result in improved air quality through reduced vehicle trips on roadways including Policy M-1.1 through M-1.9 which support the development of housing and services near existing and planned transit stops, encourage traffic calming and efficient circulation design improvement throughout the CPA, and promote bicycling, walking, and taking transit and efficient and safe modes of transportation.

Conservation and Open Space Element

Goal COS-1 promotes management of valuable resources, natural and man-made, and prevention of resource destruction and wasteful exploitation. Policy COS-1.1 supports this by promoting conservation education in community schools.

Goal COS-2 encourages planting of trees to absorb CO_2 and provide air quality benefits through runoff retention. Policy COS-2.1 recommends exploring incentives and tax breaks to meet this goal and consideration of support for removal of non-native vegetation.

2.3.4 Analysis of Project Effects and Determination as to Significance

Based on SDAPCD's Air Quality Impact Analysis (AQIA) Trigger Levels, as well as EPA rulemaking and California Environmental Quality Act (CEQA) thresholds adopted by the South Coast Air Quality Management District (SCAQMD), the County has established Screening Level Thresholds (SLTs) to assist in determining the significance of project-level regional air quality impacts (as shown in Table 2.3-7 and below). In June 2002, CARB adopted new, stricter standards for particulate matter that would affect both the coarse as well as fine particulate fraction; however, CARB delayed action on these proposed standards at the time in light of the findings related to statistical issues in several key short-term exposure health effects studies. Thus, SDAPCD adopted $PM_{2.5}$ standards consistent with the EPA's *Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards* (EPA 2005), which quantified significant $PM_{2.5}$ emissions. SDAPCD Rules 20.2 and 20.3 do not include VOC AQIA Trigger Levels. The County recommends a VOC SLT based on the threshold of significance for VOCs from the SCAQMD for projects for in the Coachella Valley.

Appendix G to the State CEQA Guidelines specifies that significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make determinations related to air quality impacts. Based on guidance provided in Appendix G of the State CEQA Guidelines and the County of San Diego *Guidelines for Determining Significance for Air Quality*, the Alpine CPU would result in a significant impact if it would:

1. Conflict with or obstruct implementation of the RAQS and/or applicable portions of the SIP.

2. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard in exceedance of the following SLTs:

    a. 100 pounds per day or 15 tons per year of PM_{10}

    b. 55 pounds per day or 10 tons per year of $PM_{2.5}$

    c. 250 pounds per day or 40 tons per year of NO_X

    d. 250 pounds per day or 40 tons per year of oxides of sulfur (SO_X)

    e. 550 pounds per day or 100 tons per year of CO

    f. 3.2 pounds per day or 0.6 tons per year of lead and lead compounds

    g. 75 pounds per day or 13.7 tons per year of VOCs

3. Expose sensitive receptors to substantial pollutant concentrations, such that:

    a. The project places sensitive receptors near CO "hotspots" or creates CO "hotspots" near sensitive receptors.

    b. Project implementation will result in exposure to TACs resulting in a maximum incremental cancer risk greater than one in one million without the application of Toxic Best Available Control Technology (T-BACT) or a health hazard index greater than one.

4. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people, such that:

    a. The project places a new odor-producing land use activity adjacent to sensitive receptors or places sensitive receptors adjacent to or near an odor-producing land use (including wastewater treatment facilities, animal facilities, organic agricultural operations, or agricultural operations that apply odor producing chemicals)

The County's SLTs, as informed by SDAPCD's Trigger Levels in Rules 20.2 and 20.3 are tied to achieving or maintaining attainment designations with the NAAQS and CAAQS. The federal and State ambient air quality standards, in turn, are scientifically substantiated, numerical concentrations of criteria air pollutants considered to be protective of human health. Using federal and State guidance pertaining to TACs, SDAPCD developed cancer risk thresholds for TAC exposure. Unlike criteria air pollutants, there are no known safe concentrations of TACs. Moreover, TAC emissions contribute to the deterioration of localized air quality because of the dispersion characteristics of TACs, emissions that do not typically cause regional-scale air quality impacts. SDAPCD thresholds are designed to ensure that a source of TACs does not contribute to a localized, significant impact to existing or new receptors. These risk-based TAC thresholds have been incorporated into the County's *Guidelines for Determining Significance for Air Quality* analyses under CEQA.

2.3.4.1 Analysis Methodology

Regional and local criteria air pollutant emissions and associated impacts, as well as impacts from TACs, CO, and odors were assessed in accordance with State CEQA Guidelines and the County of San Diego *Guidelines for Determining Significance for Air Quality*. The impacts associated with construction and operation of the Alpine CPU buildout were based on anticipated land use development for the buildout

year of 2050 relative to buildout under existing 2011 General Plan land use designations. As discussed previously, the proposed project would allow for the development of 6,078 residential units and approximately 393.46 acres of commercial land uses in the Alpine CPA. Buildout of the proposed project would allow for 2,013 additional residential units and 32.76 acres of commercial space over what is currently allowed within the Alpine CPA under the General Plan. The project does not propose any changes to allowable industrial uses in the Alpine CPA. The severity of potential impacts related to the emissions of criteria air pollutants and ozone precursors caused by the increase in development potential above allowable General Plan buildout was assessed based on the proposed project's total increase in development above existing conditions (set to a base year of "on-the-ground" development in 2012, consistent with San Diego Association of Governments [SANDAG] modeling)[1].

Emissions from construction activities and operational emissions associated with area and energy sources were estimated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2 computer program (California Air Pollution Control Officers Association [CAPCOA 2016]). This modeling tool provides estimated emissions of criteria air pollutants and GHG emissions using user-defined inputs and default data when local or project-specific data are not available. The primary inputs for emissions estimates are land uses associated with a project. As described previously in Chapter 1, Project Description, land use data for the proposed project are available at the community plan level (i.e., allowable buildout of dwelling units for residential land uses and acreage for commercial uses). The total single-family and multi-family dwelling units were used to estimate emissions associated with residential uses. To provide the most representative estimates for commercial uses, the total building square footage is needed to input into CalEEMod. Thus, for the purposes of this air quality modeling (as well as the modeling of GHG emissions provided in Chapter 2.6, Greenhouse Gases, and energy consumption provided in Chapter 3.0, Other CEQA Considerations), the acreage for these uses was converted to square feet. The anticipated square footage of buildout of commercial uses through the implementation of the proposed project and allowable General Plan buildout were estimated based on the total acreage of commercial, and mixed-use land uses, multiplied by the existing floor area ratio (FAR) of similar uses in the Alpine CPA. The existing FAR was estimated based on a reasonable rate of commercial buildout on existing sites in the Alpine CPA. An additional adjustment was made for estimated development on parcels zoned "Village Core Mixed Use (C-5)" to account for the potential mix of uses on these sites (i.e., estimated retail land use was reduced to account for additional residential uses developed on the site). This mixed-use adjustment assumed that 70 percent of the square footage on mixed-use sites would be occupied by commercial uses. This conversion was prepared by Chen Ryan and Associates (Chen Ryan 2020a), and a detailed description of this methodology is provided in Appendix G. For consistency with other Alpine CPU SEIR sections, commercial land uses within this section are described based on acreage.

Construction

Emissions from construction activities represent temporary impacts that are typically short in duration, depending on the size, phasing, and type of development. Air quality impacts can be acute during construction periods, resulting in significant localized impacts to air quality. Construction-related emissions are difficult to quantify with a high degree of accuracy at the community plan level because

[1] To determine VMT for inventories and projections, SANDAG provides jurisdiction-specific VMT data for a base year and requested horizon year(s) depending on the jurisdiction's planning milestone years. The base year VMT data for the unincorporated County that most closely represents actual conditions is the 2012 base year, consistent with Series 13 base year. This base year is used as the overall baseline for this analysis as it represents the most available dataset reflective of all existing land uses and emissions sources and is most closely calibrated in SANDAG's model.

such emissions are dependent on the characteristics and circumstances of future individual development projects that are not known at this time.

The Alpine CPU would accommodate future development of residential, commercial, and industrial land uses. The future development and other physical changes that could occur as a result of Alpine CPU implementation would generate construction-related emissions of criteria air pollutants and precursors, including VOC, NO_X, PM_{10}, and $PM_{2.5}$ from site preparation (e.g., excavation, clearing), off-road equipment, material delivery, worker commute trips, and other activities (e.g., building construction, asphalt paving, application of architectural coatings). Such activities would include use of construction equipment such as forklifts, cranes, pick-up and fuel trucks, compressors, loaders, backhoes, excavators, dozers, scrapers, pavement compactors, welders, concrete pumps, concrete trucks, and off-road haul trucks, as well as other diesel-powered equipment as necessary. Fugitive dust emissions of PM_{10} and $PM_{2.5}$ would be associated primarily with site preparation/grading and vary as a function of soil silt content, soil moisture, wind speed, acreage of disturbance, and mobile sources. Emissions of ozone precursors would be emitted from the exhaust of construction equipment and on-road vehicles. Paving and the application of architectural coatings also would result in off-gas emissions of VOCs. PM_{10} and $PM_{2.5}$ would be emitted from off-road equipment and vehicle exhaust.

As discussed previously, specific construction phasing and intensity are unknown. The levels of emissions generated through these activities would depend on the characteristics of individual future development projects under the Alpine CPU, including the size and type of land uses being developed, which would determine the length and intensity of construction activity. However, in an effort to provide a conservative estimate of potential construction-related emissions for the Alpine CPU, emissions associated with typical construction projects (i.e., single- or multi-family residential, commercial, general industrial) were quantified. Emissions were estimated based on an assumed two-year construction schedule and a hypothetical combination of land uses that could be constructed under the Alpine CPU.

Construction emissions of criteria air pollutants and precursors were estimated using the CalEEMod Version 2016.3.2 computer program (CAPCOA 2016). This analysis presents potential scenarios under which construction could occur, while acknowledging construction projects may vary in intensity and size. Thus, this analysis may provide bounds for construction emissions that could be used to evaluate future projects under the Alpine CPU, where applicable.

Operations

The quantitative analysis for operational emissions of criteria air pollutants and precursors was conducted by comparing the estimated emissions generated by the Alpine CPU to the 2011 General Plan buildout. Emission estimates include long-term operational emissions of ozone precursors (i.e. VOC and NO_X) and criteria air pollutants associated with mobile sources (i.e. vehicle trips), area sources (e.g., landscape equipment, consumer products, and ongoing maintenance activities), and energy consumption.

Emissions from area and energy sources were estimated using land use data provided by the County and identified in Chapter 1, Project Description. CalEEMod default values for landscaping equipment, hearths (including wood-burning fireplaces in residential homes), and consumer products were used where project-specific information was not available, based on the Alpine CPA's location and proposed land use types. Adjustments were made to CalEEMod default values to account for the following regulatory change that has become effective but is not accounted for in CalEEMod Version 2016.2.3:

- Default building energy consumption rates were adjusted to account for energy efficiency improvements from the 2019 California Energy Code (California Code of Regulations Title 24, Part

6), assuming a 53-percent reduction in residential energy consumption and a 30-percent reduction in non-residential energy consumption compared to the 2016 Title 24 regulations built into CalEEMod (California Energy Commission [CEC] 2018).

Emissions of criteria air pollutants and precursors from mobile sources were estimated using VMT estimates provided through the SANDAG Series 13 Activity Based Model forecasts. These forecasts provided by SANDAG include estimated VMT in 2050 for the 2011 General Plan buildout and project buildout. These modeling forecasts are described in further detail in Chapter 2.13, Transportation and Traffic. Using estimated buildout VMT, emissions of criteria air pollutants from mobile sources were estimated using emission factors for SDAB from CARB's EMFAC2017 model. Adjustment factors provided by CARB were applied to EMFAC2017 to account for anticipated future changes in emission factors as a result of the SAFE Rule.

Toxic Air Contaminants

The level of health risk from exposure to construction- and operation-related TAC emissions was assessed qualitatively because of the programmatic nature of the project. This assessment was based on the proximity of TAC-generating construction activity to sensitive receptors within the Alpine CPA, typical types of diesel-powered construction equipment that would be used, and the potential duration of potential TAC exposure. Operation-related exposure from existing sources (e.g., stationary sources, roadways) to new sensitive receptors (e.g., new residential developments under Alpine CPU) was also evaluated qualitatively.

Odors

Impacts related to odors were assessed qualitatively, based on potential construction activities, equipment types and duration of use, overall construction schedule, and distance to nearby sensitive receptors. Potential operational odor sources were also evaluated qualitatively based on the proposed land uses in the Alpine CPU. Odor impacts were evaluated in accordance with SDAPCD guidance and methods.

Carbon Monoxide "Hotspots"

CO emissions are the result of the combustion process and primarily associated with mobile emission sources (i.e. on-road vehicles). CO "hotspots" are locations where there may be high volumes of mobile-source emissions, resulting in CO concentrations that exceed the NAAQS and/or CAAQS. CO "hotspots" have been found to occur at signalized intersections that operate at or below a level of service (LOS) E with peak-hour trips exceeding 3,000 trips. Impacts related to CO "hotspots" would occur if a project places a new sensitive receptor within 500 feet of a signalized intersection operation at or below LOS E with peak-hour trips exceeding 3,000 trips, or if a project-generated trips would cause an intersection to operate at or below LOS E and exceed 3,000 peak-hour trips.

2.3.4.2 Issue 1: Conflict with Air Quality Plans

Guidelines for the Determination of Significance Analysis

The SDAB is in nonattainment for both CAAQS and NAAQS for ozone and CAAQS for PM_{10} and $PM_{2.5}$. The SDAB has prepared attainment plans for ozone (i.e., 2008 Eight-Hour Ozone Attainment Plan for San Diego County, 2008 Eight-Hour Ozone Reasonably Available Control Technology Demonstration for San Diego County, and 2016 Revision of the RAQS for San Diego County) but has not prepared a similar plan for particulate matter. The emission inventories used to develop the applicable air quality attainment plans

are based primarily on projected population and employment growth and associated VMT for the SDAB. This growth is estimated for the region based, in part, on the planned growth identified in regional and local land use plans such as general plans or community plans. Regional growth in the unincorporated County was estimated based on identified growth in the County's General Plan and associated Community Plans for each unincorporated community in the County. Therefore, projects that would result in increases in population or employment growth beyond that projected in regional or local plans could result in increases in VMT above that forecasted in the attainment plans, further resulting in mobile source emissions that could conflict with or obstruct implementation of the RAQS and applicable portions of the SIP. Increases in VMT beyond that projected in the County's General Plan, SANDAG's regional VMT modeling, and SDAPCD regional air quality attainment plans generally would be considered to have a significant adverse incremental effect on the SDAB's ability to attain CAAQS and NAAQS for all criteria air pollutants.

Impact Analysis

The 2011 General Plan EIR determined that the proposed land use designations and accompanying future development based on those designations would not conflict with or obstruct implementation of the RAQS or SIP. The discussion of impacts related to air quality plan consistency in the prior EIR can be found in Section 2.3.3.1 of the 2011 General Plan EIR and is hereby incorporated by reference. The 2016 RAQS includes various emission reduction strategies (e.g., VOC content requirements in architectural coatings, vehicle retirement programs, and off-road vehicle maintenance requirements) that would reduce VOC and NO_X emissions from future development proposed under the Alpine CPU. Development under the Alpine CPU would be subject to the SDAPCD rules and regulations including Rule 55 *Fugitive Dust Control* and Rule 67.0.1 *Architectural Coatings*, and County Code Section 87.428 (Grading Ordinance). In addition, the Alpine CPU would support and assist with the implementation of air quality policies in the 2011 General Plan through compliance with SDAPCD rules, listed in Section 2.3.1.3, Local Regulations.

The project proposes changes to the land use development potential in four of the seven of the Alpine CPA subareas. These land use changes would generally result in increased density, intensity and the number of dwelling units (see Section 1.4.2*, Proposed Land Use Changes*) compared to the existing land use map in the current Alpine Community Plan. The project proposes 2,013 additional housing units and 32.76 acres of commercial uses beyond what was planned in the 2011 General Plan Update.

Due to the increase in residential development and commercial uses, a net increase in VMT is projected from the 2011 General Plan Update. It is estimated that the proposed project would result in an incremental increase of 236,957 daily VMT, which was not considered in the regional growth projections based on the 2011 General Plan Update.

The RAQS utilizes SANDAG population forecasts and CARB mobile source forecasts to develop emissions reduction measures necessary for attaining the NAAQS. The SANDAG model used for projecting growth in the unincorporated County, including within the Alpine CPA, considers the demographic, economic, and land use data from the existing General Plan and Alpine Community Plan. Because the project is proposing development in the Alpine CPA beyond what was included in the RAQS forecasts and SIP, the Alpine CPU would be inconsistent with the RAQS and applicable portions of the SIP. This impact is **potentially significant** because the Alpine CPU would result in growth that was not anticipated in the RAQS or SIP.

The proposed increase in population and dwelling units in the Alpine CPA would increase the total VMT. However, as described in Chapter 2.14, Transportation and Traffic, as the density within the village center increases, the distance between land uses is reduced, resulting in shorter trips. Though the project would result in an overall increase in VMT, the average VMT per capita would be less than what would be

projected for the existing 2011 General Plan land uses. The improvement in per capita VMT indicates increased efficiency and reduced distance per trip and would result in fewer emissions of criteria air pollutants generated per vehicle trip.

Federal, State, and Local Regulations and Existing Regulatory Processes

Several federal, State, and local regulations would apply to the Alpine CPU and associated future developments. Mobile emissions sources are regulated by the EPA and CARB, and the emissions and reduction strategies related to mobile sources are considered in the SIP. Additionally, the SIP provides strategies for attaining and maintaining the ozone and CO NAAQS. SDAPCD has developed the RAQS and ozone attainment plans that address emissions reduction measures designed to reduce emissions of ozone precursors. To support these ozone reduction goals, SDAPCD has developed specific reduction strategies for development projects. These strategies include control measures for VOCs and NO_X emissions for which compliance must be demonstrated through permitting requirements with the SDAPCD. In addition, the RAQS includes strategies to reduce emissions from other emissions sources including on-road vehicles, landscaping equipment, and back-up generators. Future development occurring under the Alpine CPU would be required to be consistent with the emissions reduction strategies in the RAQS and SIP in order to comply with SDAPCD rules and regulations and obtain required SDAPCD permits for applicable sources. Future projects subject to discretionary review would also demonstrate consistency during the environmental review process.

By reference, the Alpine CPU has incorporated air quality mitigation measures identified in the 2011 General Plan EIR, such as Air-2.1 and Air-2.4 through Air-2.9. The applicable 2011 General Plan EIR mitigation measures encourage the use of hybrid and alternatively fueled vehicles, promote clean air technologies, require projects to reduce construction-related emissions, and require compliance with existing regulations to reduce the effects on air quality. SANDAG provides regional demographics projections that are used in the development of the RAQS and air quality attainment plans. In addition to this modeling, SANDAG provides regional VMT estimates and forecast that support the development of transportation plans and air quality analyses. These forecasts rely on coordination with local jurisdictions to determine potential growth that could occur throughout the County identified in general plans and capital facilities plans. On an annual basis, the County provides SANDAG with updated land use designations in the General Plan or community plans to ensure SANDAG demographics, employment, and transportation forecasts reflect the most recently approved plans and developments. Through annual coordination with SANDAG, the County provides land use changes that would be included in forecasts used by SDAPCD to develop updates to the RAQS and air quality attainment plans.

Summary

The project would increase the permitted number of dwelling units and commercial uses in the Alpine CPA, resulting in an increase in annual VMT above what was anticipated through the 2011 General Plan. This increase in population, employment, and VMT was not included in regional growth forecasts used in preparation of the RAQS and SIP. Because the project would result in growth beyond what was assumed in the RAQS, the project may conflict with the region's attainment plans. Thus, the project's impact would be **potentially significant** and specific implementation programs are identified as mitigation (Impact AQ-1).

2.3.4.3 Issue 2: Result in a Cumulatively Considerable Increase in Nonattainment Pollutant.

Guidelines for the Determination of Significance Analysis

Emissions in excess of the County's SLTs, shown in Table 2.3-7, would be expected to have a significant impact on regional air quality because an exceedance of the SLTs is anticipated to contribute to CAAQS and NAAQS violations in the County.

Table 2.3-7. County of San Diego Screening Level Thresholds

	Total Emissions		
Pollutant	**lb/hr**	**lb/day**	**ton/year**
Respirable Particulate Matter	—	100	15
Fine Particulate Matter[1]	—	55	10
Nitrogen Oxides	25	250	40
Sulfur Oxides	25	250	40
Carbon Monoxide	100	550	100
Lead and Lead Compounds	—	3.2	0.6
Volatile Organic Compounds[2]	—	75	13.7

Source: County of San Diego, 2007
Notes: lb/day = pounds per day; lb/hr = pounds per hour
[1] Based on EPA's "Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards" published September 8, 2005, and also South Coast Air Quality Management District's Air Quality Significance Thresholds (South Coast Air Quality Management District 2015).
[2] Threshold for volatile organic compounds (VOCs) based on the threshold of significance for VOCs from the South Coast Air Quality Management District for the Coachella Valley.
[3] 13.7 Tons Per Year threshold based on 75 lb/day multiplied by 365 days/year and divided by 2000 lb/ton.

For CEQA purposes, these SLTs can be used to demonstrate that a project's total emissions would not result in a significant impact to air quality. The hourly and yearly SLTs are most appropriately used in situations when temporary emissions like emergency generators or other stationary sources are proposed as part of a project. The daily SLTs are most appropriately used for the standard construction and operational emissions (County of San Diego 2007).

Supportive of the NAAQS and CAAQS, the County's SLTs are scientifically substantiated, numerical mass emissions levels of criteria air pollutants considered to be protective of human health. A project with emissions rates below these thresholds is considered to have a less than significant impact on regional and local air quality and would have a low potential for resulting in impacts to human health due to the nexus between SLTs, ambient air quality standards, and public health.

Impact Analysis

The 2011 General Plan EIR determined that the proposed land use designations and accompanying future development based on those designations would result in significant and unavoidable impacts related to violations of an air quality standard and cumulatively considerable contributions to a net increase in pollutants for which the SDAB is in nonattainment. The discussion of impacts related to air quality

violations and cumulatively considerable pollutant emissions in the prior EIR can be found in Sections 2.3.3.2 and 2.3.3.3 of the 2011 General Plan EIR and is hereby incorporated by reference.

2011 General Plan Policy COS-14.10, described in Section 2.3.2.3, may help reduce construction-generated criteria pollutant emissions by requiring construction contractors (and encourages other developers) to use low-emission construction vehicles and equipment. SDAPCD Rule 55 and SDAPCD's Rule 67.0.1 would also reduce construction-generated emissions. The 2011 General Plan EIR also includes several air quality mitigation measures that would be applicable to the proposed project, including Air-2.5, Air-2.6, Air-2.7, Air-2.9, which are provided in Section 2.3.6.

Construction

Future development and other physical changes that could occur as a result of Alpine CPU implementation would generate construction-related emissions of criteria air pollutants and precursors, including VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$, from site preparation (e.g., excavation, clearing), off-road equipment, material delivery, worker commute trips, and other activities (e.g., building construction, asphalt paving, application of architectural coatings). Some of this construction activity was previously accounted for and analyzed in the 2011 General Plan EIR and could occur without the implementation of the proposed project. However, as the proposed project would allow for additional development of land uses greater than what is allowed under the General Plan, an increase in construction activity could occur.

As discussed previously, specific construction phasing and intensity are unknown. For this analysis, a worse case construction scenario was developed to assess a potential, worst-case scenario under the Alpine CPU related to construction impacts. Under a worst-case scenario, modeled emissions assume that one quarter of the allowable development in the Alpine CPU would be constructed over a two-year period. This scenario is modeled to represent the highest potential construction intensity that could occur to model emissions on the worst day. Construction schedules were adjusted to reflect a condensed, two-year development timeline and estimated using CalEEMod default construction equipment. The emissions associated from construction of this potential development scenario are presented in Table 2.3-8.

Table 2.3-8. Maximum Daily Construction Emissions Associated with 25 Percent of the Alpine CPU Buildout (pounds per day)

Source	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
25 percent of Proposed Project						
2021	25	246	180	<1	74	40
2022	348	79	94	<1	17	6
Maximum Daily	348	246	180	<1	74	40
Exceed Significant Threshold?	Yes	No	No	No	No	No
Significance Threshold	75	250	550	250	100	55

Source: Appendix D

Notes: Totals may not add exactly due to rounding.

VOC = volatile organic compound NO = oxides of nitrogen CO = carbon monoxide SOx = oxides of sulfur

PM_{10} = respirable particulate matter $PM_{2.5}$ = fine particulate matter

As shown in Table 2.3-8, construction activities associated with the potential development of one quarter of the allowable Alpine CPU uses could result in emissions of VOCs in excess of County SLTs. Additionally, though NO_X emissions shown in Table 2.3-4 were estimated not to exceed the County's SLTs, they are relatively close to this threshold. Thus, it is possible that NO_X emissions could exceed County SLTs if

project conditions change such that additional equipment use or trips would occur in a single day, or multiple construction activities occur simultaneously in the CPA, increasing the maximum daily emissions. For this reason, construction emissions associated with the proposed project could also result in emissions of NO_X in excess of County SLTs. While the construction modelling was conducted to reflect a hypothetical scenario in which a substantial amount of development occurred in a short timeframe, the modeling identifies that significant amount of simultaneous construction activity could result in exceedances of County SLTs. Under this hypothetical development scenario, it was assumed that project-specific construction activities could occur simultaneously (i.e., grading activities from one project occurring simultaneous to building construction of another). These scenarios could result in the generation of emissions from construction equipment, application of architectural coating, or ground disturbance that, when combined with other projects, would potentially exceed thresholds.

The addition of VOCs and NO_X, which are precursors to ozone, could result in an increase in ambient concentrations of ozone in the County and, moreover, increase the likelihood that ambient concentrations exceed the CAAQS and NAAQS. As summarized in Section 2.3.1, human exposure to ozone may cause acute and chronic health impacts including coughing, pulmonary distress, lung inflammation, shortness of breath, and permanent lung impairment. Also, depending on future projects' construction schedules and earth-moving activities, increases in construction generated emissions of particulate matter could impede SDAPCD's efforts to bring the region into attainment of the CAAQS for PM_{10} and $PM_{2.5}$.

However, it would be misleading to correlate the levels of criteria air pollutant and precursor emissions associated with implementation of the proposed project to specific health outcomes for sensitive receptors. While the description of effects noted above could manifest in the recipient receptors, actual effects on individuals depend on individual factors, such as life stage (e.g., older adults are more sensitive), preexisting cardiovascular or respiratory diseases, and genetic polymorphisms. Even armed with this type of specific medical information (which is confidential to the individual), there are wide ranges of potential outcomes from exposure to ozone precursors and particulates, from no effect to the effects described above. Therefore, other than determining the types of health effects that could occur, it would be speculative to more specifically correlate exposure to criteria air pollutant and precursors from this project to specific health outcomes for sensitive receptors. When evaluating emissions of air pollutants against the County's SLTs, with the understanding that such thresholds are intended to apply to individual projects, it is conservatively possible that health complications associated with criteria air pollutant exposure could be exacerbated by construction-generated emissions.

Further, all proposed projects under the Alpine CPU that may require discretionary review would need to comply with General Plan policies and 2011 General Plan EIR mitigation measures, relevant County ordinances, and SDAPCD rules.

Nonetheless, because of the nonattainment status of the County for ozone, PM_{10}, and $PM_{2.5}$, construction activities associated with proposed project implementation may result in adverse air quality impacts to existing surrounding land uses and may contribute to the existing adverse air quality condition in the County. Further, as actual construction phasing is not known, it is possible that emissions may exceed or be below modeled emissions shown in Table 2.3-8. Based on conservative modeling described above, it is possible that development under the proposed project could exceed County SLTs at some point during the construction phases. Therefore, construction emissions could contribute to the existing nonattainment condition in the County with respect to the CAAQS and NAAQS for ozone and particulate matter and could therefore increase the potential for adverse health impacts from exposure to these pollutants.

This impact is **potentially significant** because potential emissions generated during construction activities as a result of the Alpine CPU would exceed SLTs.

Operation

Future development and other physical changes that could occur as a result of Alpine CPU implementation would result in long-term operational emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. Operational emissions would be generated from area sources (e.g., landscaping-related fuel combustion sources, the periodic application of architectural coatings, and the use of consumer products), energy use (e.g., electricity and natural gas), and from additional vehicle trips associated with all new land use development. To estimate the change in emissions between the Alpine CPU and conditions assumed in the 2011 General Plan EIR, emissions were quantified using CalEEMod.

Existing operational emissions of criteria air pollutants and ozone precursors were estimated for existing, "on-the-ground" activities. The existing land uses were based on a 2012 baseline year, which is reflective of the best available land use data for the Alpine CPA and consistent with the base year VMT modeling from SANDAG's Series 13 estimates. This base year is considered best available because it is calibrated by SANDAG based on actual conditions reflected by existing land uses, travel surveys, and state of the transportation network. A summary of the existing operational emissions for the Alpine CPA are shown in Table 2.3-9.

Table 2.3-9. Modeled Maximum Daily Emissions of Criteria Air Pollutants and Precursors Emissions (lb/day) Associated with the Existing Conditions for the Alpine CPA

	lb/day					
Source	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Existing Conditions (2012)						
Natural Gas Usage	5	45	21	<1	4	4
Architectural Coating	37	<1	<1	<1	<1	<1
Consumer Products	235	<1	<1	<1	<1	<1
Hearth [1]	10,046	196	12,400	22	1,739	1,739
Landscaping	17	6	543	<1	3	3
Mobile	362	673	2,911	8	114	51
Total	10,701	920	15,876	31	1,859	1,797

Source: Appendix D

Notes: Totals may not add exactly due to rounding.

lb/day = pounds per day VOC = volatile organic compound NO = oxides of nitrogen CO = carbon monoxide

SOx = oxides of sulfur PM_{10} = respirable particulate matter $PM_{2.5}$ = fine particulate matter

[1] The actual number of existing hearths (i.e. wood burning fireplaces or stoves) is unknown in the Alpine CPA. Emissions from hearth usage is based on CalEEMod default values which assume 35 percent of single- and multi-family residential units in San Diego County have wood burning hearths.

As described in Chapter 1.0, Project Description, the Alpine CPU would allow for the development of additional residential and commercial uses in the Alpine CPA. Though the actual frequency of residential units and commercial uses that would be built by 2050 (the planning horizon year for the Alpine CPU) and the intervening years is ultimately unknown, the maximum possible buildout based on the allowed land uses is used in this operational analysis. This maximum buildout was estimated using the existing

FAR based on a reasonable rate of commercial buildout on existing sites in the Alpine CPA, described previously in Section 2.3.3.1, Analysis Methodology. The Alpine CPU would allow for the development of approximately 6,078 residential units and 393.46 acres of commercial space. Over the buildout of the Alpine CPU, this would allow for 2,013 additional residential units and 32.76 additional acres of commercial space than what is currently allowed under the General Plan.

For the purposes of this analysis, the potential impacts from operations of the Alpine CPU are determined based on the potential increase in emissions of criteria air pollutants beyond what is currently allowed in the 2011 General Plan. Table 2.3-10 summarizes the maximum daily operational emissions of criteria air pollutants and precursors that would be generated by buildout of the allowed uses under the 2011 General Plan and the Alpine CPU, and a comparison of the net change in emissions to the County's SLTs.

Table 2.3-10. Modeled Maximum Daily Emissions of Criteria Air Pollutants and Precursors Emissions (lb/day) Associated with the 2011 General Plan and Alpine CPU Buildout

	lb/day					
Source	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
2011 General Plan						
Natural Gas Usage	8	72	40	<1	6	6
Architectural Coating	66	<1	<1	<1	<1	<1
Consumer Products	439	<1	<1	<1	<1	<1
Hearth	16,267	318	20,079	36	2,815	2,815
Landscaping	27	10	878	<1	5	5
Mobile	222	505	2,562	8	169	70
Total	17,028	905	23,559	45	2,995	2,896
Alpine CPU						
Natural Gas Usage	9	76	42	<1	6	6
Architectural Coating	74	<1	<1	<1	<1	<1
Consumer Products	488	<1	<1	<1	<1	<1
Hearth	19,347	378	23,882	43	3,348	3,348
Landscaping	32	12	1,043	<1	6	6
Mobile	257	586	2,970	10	196	81
Total	20,207	1,052	27,937	53	3,556	3,441
Net Change from 2011 General Plan	3,179	147	4,378	8	561	546
Net Change from Existing Conditions (2012)	9,506	132	12,061	23	1,697	1,645
Exceed Significant Threshold?	Yes	No	Yes	No	Yes	Yes

	lb/day					
Source	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Significance Threshold	75	250	550	250	100	55

Source: Appendix D

lb/day = pounds per day VOC = volatile organic compound NO = oxides of nitrogen CO = carbon monoxide

SOx = oxides of sulfur PM_{10} = respirable particulate matter $PM_{2.5}$ = fine particulate matter

Notes: Totals may not add exactly due to rounding. Determination of threshold exceedance and significance are based on the net increase of emissions between existing conditions in 2012 and the proposed project. Emissions from industrial sources were modeled in separate CalEEMod files to reflect no increase in industrial uses beyond existing conditions. Details are shown in Appendix D.

As shown in Table 2.3-10, the proposed project would result in emissions of criteria air pollutants and ozone precursors greater than what would have been anticipated under the 2011 General Plan. As compared to existing conditions, operational activities would result in net emissions of VOC, CO, SO_X, PM_{10}, and $PM_{2.5}$ that exceed the County SLTs. The addition of VOCs, which is a precursor to ozone, could result in an increase in ambient concentrations of ozone in the SDAB and, moreover, increase the likelihood that ambient concentrations exceed the CAAQS and NAAQS. The generation of VOCs are largely attributable to the assumed installation of wood burning fireplaces and stoves, assumed using CalEEMod default values. As summarized in Section 2.3.1.2, Air Quality Setting, human exposure to ozone may cause acute and chronic health impacts including coughing, pulmonary distress, lung inflammation, shortness of breath, and permanent lung impairment.

Also, depending on future projects' construction schedules and earth-moving activities, increases in construction generated emissions of particulate matter could impede SDAPCD's efforts to bring the region into attainment of the CAAQS for PM_{10} and $PM_{2.5}$. However, it would be misleading to correlate the levels of criteria air pollutant and precursor emissions associated with implementation of the proposed project to specific health outcomes for sensitive receptors. While the description of effects noted above could manifest in the recipient receptors, actual effects on individuals depend on individual factors, such as life stage (e.g., older adults are more sensitive), preexisting cardiovascular or respiratory diseases, and genetic polymorphisms.

Although this type of specific medical information is available (but confidential to the individual), there are wide ranges of potential outcomes from exposure to ozone precursors and particulates, from no effect to the effects described above. Therefore, other than determining the types of health effects that could occur, it would be speculative to more specifically correlate exposure to criteria air pollutant and precursors from this project to specific health outcomes for sensitive receptors. When evaluating emissions of air pollutants against the County's SLTs, with the understanding that such thresholds are intended to apply to individual projects, it is conservatively possible that health complications associated with criteria air pollutant exposure could be exacerbated by construction-generated emissions.

Further, all proposed projects under the Alpine CPU that require discretionary review would need to comply with General Plan policies and 2011 General Plan EIR mitigation measures, relevant County ordinances, and SDAPCD rules.

Nonetheless, because of the nonattainment status of the County for ozone, PM_{10}, and $PM_{2.5}$, construction activities associated with proposed project implementation may result in adverse air quality impacts to existing surrounding land uses and may contribute to the existing adverse air quality condition in the County. Further, as actual construction phasing is not known, it is possible that emissions may exceed or be below modeled emissions shown in Table 2.3-8. Nonetheless, based on conservative modeling

described above, it is possible that development under the proposed project could exceed County SLTs at some point during the construction phases. Therefore, construction emissions could contribute to the existing nonattainment condition in the County with respect to the CAAQS and NAAQS for ozone and particulate matter and could therefore increase the potential for adverse health impacts from exposure to these pollutants.

This impact is **potentially significant** because emissions generated from operations would result in emissions in exceedance of the SLTs.

Federal, State, and Local Regulations and Existing Regulatory Processes

Several federal, State, and local agencies, including the County, have identified measures to be implemented to reduce emissions from criteria air pollutants. These measures include CARB motor vehicle standards, SDAPCD reduced-VOC architectural coating rules, and CEC Title 24 Energy Efficiency Standards requirements. Further, all discretionary projects processed by the County are evaluated based on the County's *Guidelines for Determining Significance for Air Quality* which uses the SLTs for criteria air pollutants to determine potential impacts. Individual projects subject to discretionary review would be required to implement all feasible mitigation measures if they are found to generate construction or operational emissions of criteria air pollutants in excess of the SLTs.

The SDAB is currently classified as nonattainment for federal and State ozone standards and State PM_{10} and $PM_{2.5}$ standards. As described in Section 2.3.1.2, Issue 1: Conflict with Air Quality Plans, the SDAPCD has published attainment plans for ozone that are based on demographic, employment, and transportation projections provided by SANDAG. Through the County's annual coordination with SANDAG to provide updated land use development potential allowed in the County's General Plan and associated community plans, future updates to the RAQS and attainment plans would include regulatory measures that support attainment of federal and State ozone standards with the implementation of the Alpine CPU.

Summary

The project would result in emissions of criteria air pollutants from construction- and operations-related activities. Because the timing and intensity of construction activities is dependent on market conditions and unknown at this time, emissions from construction activities from future developments may result in exceedances of the County SLTs. Operational emissions from the buildout of the allowable Alpine CPU land uses were found to exceed the County SLTs for VOC, CO, PM_{10} and $PM_{2.5}$. Therefore, impacts related to emissions of criteria air pollutants would be **potentially significant** and specific implementation programs are identified as mitigation (Impact AQ-2).

2.3.4.4 Issue 3: Expose Sensitive Receptors to Substantial Pollutant Concentrations

Guidelines for the Determination of Significance Analysis

Using federal and State guidance pertaining to TACs, SDAPCD developed cancer risk thresholds for TAC exposure. Unlike criteria air pollutants, there is no known safe concentrations of TACs. Under SDAPCD's Rule 1200 Projects that would result in exposure to TACs resulting in a maximum incremental cancer risk (MICR) greater than 1 in 1 million without application of T-BACT, MICR greater than 10 in 1 million with application of Toxics T-BACT, or a chronic and acute non-cancer health hazard index greater than 1 would be deemed as having a potentially significant impact related to health risks from diesel PM exposure.

CO emissions are the result of the combustion process and primarily associated with mobile emission sources (i.e. on-road vehicles). CO "hotspots" are locations where there may be high volumes of mobile-source emissions, resulting in CO concentrations that exceed the NAAQS and/or CAAQS. CO "hotspots" have been found to occur at signalized intersections that operate at or below a LOS E with peak-hour trips exceeding 3,000 trips. Impacts related to CO "hotspots" would occur if a project places a new sensitive receptor within 500 feet of a signalized intersection operation at or below LOS E with peak-hour trips exceeding 3,000 trips, or if a project-generated trips would cause an intersection to operate at or below LOS E and exceed 3,000 peak-hour trips.

Impact Analysis

The 2011 General Plan EIR determined that the proposed land use designations and accompanying future development based on those designations would result in significant and unavoidable impacts related to the exposure of sensitive receptors to substantial amounts of TACs or HAPs. The discussion of impacts related to exposure of sensitive receptors in the prior EIR can be found in Section 2.3.3.4 of the 2011 General Plan EIR and is hereby incorporated by reference.

The focus of the analysis of TACs for the Alpine CPU is diesel PM. Although other TACs exist (e.g., benzene, 1,3-butadiene, hexavalent, chromium, formaldehyde, methylene chloride), they are primarily associated with industrial operations. The potential cancer risk from the inhalation of diesel PM outweighs the potential for all other health impacts (i.e., noncancer chronic risk, short-term acute risk) and health impacts from other TACs (CARB 2003). With regards to exposure of diesel PM, the dose to which receptors are exposed is the primary factor used to determine health risk. 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 level of health risk for any exposed receptor. According to Office of Environmental Health Hazard Assessment's (OEHHA's *Air Toxics Hot Spots Program Risk Assessment Guidelines*, exposure of sensitive receptors to TAC emissions should be based on a 30-year exposure period for estimating cancer risk at the Maximum Exposed Individual (MEI), with 9- and 70-year exposure periods at the MEI as supplemental information. Furthermore, a 70-year exposure period is recommended for estimating cancer burden or providing an estimate of population-wide risk (OEHHA 2015).

Construction

Construction-related activities would result in temporary, intermittent emissions of diesel PM from the exhaust of off-road, heavy-duty diesel equipment used for site preparation (e.g., demolition, clearing, grading); paving; on-road truck travel; and other miscellaneous activities. On-road diesel-powered haul trucks traveling to and from the construction areas to deliver materials and equipment are less of a concern because they would not stay on the site for long periods of time.

Risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period. However, it is likely that construction activities would be located at various locations throughout the Alpine CPA, and due to the dispersive properties of diesel PM, concentrations from individual construction sites would be lower. In addition, construction activities would occur over a thirty-year time frame and would not occur all at once. As such, no single existing or future receptor is anticipated to be exposed to substantial construction-related emissions of diesel PM for extended periods of time.

Table 2.3-5 above shows the sensitive receptors within the CPA. Without specific details on the locations of future building footprints or their construction schedules, a quantitative evaluation of potential health risk impacts is not feasible. However, as noted above, construction activities occurring in the Alpine CPA

would be temporary and would not expose a single receptor to substantial exposure of construction-related emissions of diesel PM. Additionally, all construction projects would be required to comply with SDAPCD rules and County ordinances regulating construction activities. Further, mitigation identified under Impact-AQ-2 would serve to substantially reduce diesel PM emission from construction activities. For this reason, this impact would be less than significant for construction activities.

Operations

Proximity to highways increases cancer risk and exposure to diesel PM. Similarly, proximity to heavily traveled corridors and intersections would expose future residents of Alpine CPU to higher levels of diesel PM. CARB recommends avoiding siting new sensitive land uses, such as residences, schools, daycare centers, playgrounds, or medical facilities, within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day (CARB 2005). Portions of Alpine CPU subareas three, four, five, and six are located within 500 feet of I-8 and include land use designations that would allow for the future development of residences. While it is outside of the scope of this analysis to identify the impacts of these existing environmental conditions on future development, development allowed under the Alpine CPU may exacerbate any existing environmental impacts to sensitive receptors located in these areas.

According to Chapter 2.14, *Transportation and Traffic*, the proposed project would result in average daily traffic volume capacity ranges from 8,000 (at Viejas View Place) to 23,400 (at New Road 11). There are no urban roads with 100,000 vehicles or rural roads with 50,000 vehicles per day within the Alpine CPA (Chen Ryan 2020b). As implementation of the Alpine CPU would ultimately result in the new development of residential units, and non-residential space at buildout in 2050, the increase in traffic from the Alpine CPU would generate additional vehicle-related TACs (including diesel PM). As I-8 is currently classified as a freeway with high volumes in a rural setting (per CARB's Land Use Handbook) and experiences a high proportion of truck traffic, the future traffic levels from the Alpine CPU could exacerbate existing cumulative health risks.

Implementation of the Alpine CPU would result in new land uses that could generate new sources of TACs from non-residential land uses. Due to the programmatic level of this analysis, the size, land uses, and location of future development are not available. While it is unknown what specific sources would be installed or where they would operate, all new stationary sources would be subject to the permit authority of the SDAPCD. The SDAPCD will not issue a permit for a new permitted source that results in MICR in excess of 10 in one million with application of T-BACT or a hazard index greater than one.

While health risk from non-residential sources would likely be reduced through SDAPCD permitting requirements, health risks in the Alpine CPU are mainly attributable to operational exposure to on-road vehicles. CARB programs designed to reduce emissions, as well as phase-out of older vehicles, would reduce emissions from these pollutants over time, but not to a less than significant level. Furthermore, growth anticipated through implementation of the Alpine CPU would result in additional on-road vehicles within the County. This impact would be **potentially significant** because the project would result in an increased number of vehicle and truck trips occurring on roadways that could exacerbate exposure of sensitive receptors to TACs.

Federal, State, and Local Regulations and Existing Regulatory Processes

Various federal and State regulations are implemented at the local level by SDAPCD and the County. SDAPCD Rule 1210 implements the California Air Toxics "Hotspots" Information and Assessment Act (AB 2588), requiring facilities that exceed recommended OEHHA levels to reduce risk to acceptable levels.

Additionally, CARB implements programs to identify and reduce emissions from sources of diesel PM. These programs include control strategies for off-road, on-road, and marine vessel diesel sources that are regulated by the EPA. SDAPCD also requires all project that propose demolition or similar activities comply with requirements for identify, reporting, and safely disposing of asbestos-containing materials. Further, under Rule 1206, all construction projects that include any demolition or similar activity are required to comply with SDAPCD asbestos testing, reporting, and safe disposal requirements. Compliance with these requirements would reduce potential impacts to sensitive receptors related to asbestos fibers exposure. Discretionary projects in the County are also evaluated for health risks pursuant to the County's *Guidelines for Determining Significance for Air Quality* which requires projects to prepare a health risk assessment depending on the uses proposed and proximity to emissions sources or sensitive receptors.

Summary

Implementation of the Alpine CPU could result in exposure of sensitive receptors to construction-related TACs. However, given that future development under the Alpine CPU would occur incrementally between 2020 and 2050 and in various areas throughout the Alpine CPA, it is unlikely that any one sensitive receptor would be exposed to construction-related TACs for extended periods of time. Therefore, construction activity as a result of the Alpine CPU would not result in the exposure of existing or new sensitive receptors to a substantial increase in TAC emissions. The Alpine CPU would also result in an increase in total VMT along local roadways within the County as a result of future growth and development. This increase in vehicle and truck traffic could result in increased pollutant emissions on roadways that may exacerbate health risks to existing and future sensitive uses located in close proximity to roadways with high traffic volumes. All new development undergoing discretionary review would be required to evaluate existing TAC exposure and incorporate available reduction measures in accordance with the SDAPCD requirements, if necessary. However, because it is unknown the level at which future sensitive receptors could be exposed to harmful pollutant emissions exacerbated by Alpine CPU—related development, this impact would be **potentially significant,** and specific implementation programs are identified as mitigation (Impact AQ-3).

2.3.4.5 Issue 4: Result in Other Emissions (Odors) Affecting a Substantial Number of People

Guidelines for the Determination of Significance Analysis

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 affected receptors. While offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress among the public and often generate citizen complaints to local governments and regulatory agencies. Projects with the potential to frequently expose a substantial number of people to objectionable odors would be deemed to have a significant impact.

Impact Analysis

The 2011 General Plan EIR determined that the proposed land use designations and accompanying future development based on those designations would not generate significant sources of odors. The discussion of impacts related to the generation of objectionable odors in the prior EIR can be found in Section 2.3.3.5 of the 2011 General Plan EIR and is hereby incorporated by reference.

Odor sources of concern can include wastewater treatment plants, landfills and composting facilities, petroleum refineries, chemical manufacturing plants, painting/coating operations, and food processing

facilities. Six of the seven Alpine CPU land use subareas would be re-designated with land use designations supporting the uses of residential, open space, and commercial. Further, the potential land uses associated with the Alpine CPU do not include land uses that are typically associated with substantial odors (e.g., landfills, agricultural operations, wastewater treatment plants, food processing plants, chemical plants, composting, dairies, or fiberglass molding). In addition, should a new odor source be proposed within the Alpine CPA, SDAPCD Rule 51 *Nuisance* restricts the emission of air contaminants or other materials that would cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public. As a result, any odor sources cited in the Alpine CPA would be required to implement specific actions to remain in compliance with SDAPCD Rule 51.

Minor odors from the use of heavy-duty diesel-powered equipment and the laying of asphalt during construction activities would be intermittent and temporary. Due to the characteristics of diesel exhaust emissions, odors generated from the use of heavy-duty diesel-powered equipment would dissipate rapidly within 150 meters (492 feet) (Zhu et al. 2002a, 2002b). While construction would occur intermittently between 2020 and 2050, these types of odor-generating activities are not anticipated to occur at any single location or within close proximity to any individual receptors in the Alpine CPA for an extended period of time and would not result in permanent odor sources. Therefore, construction is not anticipated to result in the generation of odors that would affect a substantial number of people.

New non-residential land uses that could be developed under the Alpine CPU would not allow for the siting of any odor sources identified previously. The use of heavy-duty diesel equipment for development of land uses in the Alpine CPA are not anticipated to result in substantial odors. Any development that would occur within the Alpine CPA that could be considered an odor generator would be required to comply with relevant odor management regulations including SDAPCD Rule 51 and other odor impact minimization plan requirements. As a result, implementation of the Alpine CPU would not result in odor impacts on existing sensitive receptors or future sensitive receptors. This impact would be **less than significant**.

Federal, State, and Local Regulations and Existing Regulatory Processes

Facilities that cause nuisance odors are subject to enforcement action by the SDAPCD and County's Department of Environmental Health Local Enforcement Agency (LEA). Both SDAPCD and LEA respond to odor complaints to determine if odors generated by sites or projects violate nuisance rules. In the event an odor impact is identified by SDAPCD or LEA, appropriate means must mitigate odor-causing impacts to reduce the impacts to sensitive receptors to less than significant. Such means can include shutdown of odor sources or requirements to minimize odor generation. Discretionary projects considered by the County are evaluated for objectionable odors pursuant to the County's *Guidelines for Determining Significance for Air Quality*. Depending on the uses proposed and proximity to off-site receptors, discretionary projects may also be required to submit additional documentation (e.g., Odor Impact Minimization Plan) to comply with SDAPCD or LEA requirements and receive permits to operate.

Summary

The project would generate odors during construction activities such as the operation of construction equipment, the laying of asphalt, and application of architectural coatings. However, these odors would be temporary and would occur at various locations within the Alpine CPA. Construction odor impacts are localized and dissipate rapidly with distance from source as stated above. These potential odors would not be generated in a single location for an extended period, thus would not be anticipated to expose considerable number of persons or the public to significant odor emissions. All projects developed in the Alpine CPA will be required to comply with SDAPCD nuisance rules. SDAPCD Rule 51 (Public Nuisance)

and California Health & Safety Code, Division 26, Part 4, Chapter 3, Section §41700 prohibit the emission of any material which causes nuisance to a considerable number of persons or endangers the comfort, health or safety of the public. Further, the proposed project would implement mitigation measures MM-AQ-2 and MM-AQ-3 which would reduce unnecessary or excessive odors emissions from construction vehicles at any one location through restricting idling and staggering construction schedules.

The project does not propose any land uses that would typically be considered odor-generating uses. Should any odor-generating uses be developed in the Alpine CPA, they would be required to comply with relevant SDAPCD and County regulations for managing and mitigating odors. Thus, the project would not result in the generation of odors that would affect a substantial amount of people and this impact would be **less than significant**.

2.3.5 Cumulative Impacts Analysis

The geographic scope of the cumulative impact analysis for air quality includes the County and surrounding vicinity. Areas considered to be within the surrounding vicinity of the Alpine CPA include: the City of El Cajon, other unincorporated County CPAs (e.g., Lakeside or Valle de Oro), U.S. Forest Service lands, and tribal lands (i.e., Viejas Reservation and Sycuan Rancheria),The cumulative scope includes the San Diego region or the airshed for reactive air pollutants and surrounding vicinity for nonreactive or less reactive pollutants.

2.3.5.1 Issue 1: Conflict with Air Quality Plans

The Alpine CPU would result in a cumulative impact by conflicting with air quality plans if the projected growth within the County combined with the Alpine CPU or other cumulative projects (i.e., projects in the unincorporated County or other jurisdictions proposing General or Community Plan Amendments, or developments on federal and tribal lands would obstruct implementation of the RAQS and SIP. Furthermore, individual projects proposed under the Alpine CPU that conflict with development beyond the regional projects could result in a cumulative impact. However, like all projects proposed in the unincorporated County and incorporated cities, individual projects proposed under the Alpine CPU would need to demonstrate that they would not conflict with the goals and strategies identified in the RAQS and SIP, and other regional air quality plans through discretionary review.

The Alpine CPU would increase land use density and intensity and result in higher growth than what was anticipated under the 2011 General Plan Update. In addition to SDAPCD rules and regulations and the 2011 General Plan EIR policies and mitigation, the County would be required to provide a revised housing and population forecasts to SANDAG to ensure that any revisions to the population and employment projections used by SDAPCD to update the RAQS and SIP will accurately reflect anticipated growth under the Alpine CPU. However, because growth projections may not be updated prior to the construction of projects proposed under the Alpine CPU, the project would result in a **potentially significant cumulative impact** (**Impact C-AQ-1**).

2.3.5.2 Issue 2: Result in a Cumulatively Considerable Increase of Nonattainment Criteria Air Pollutants

The SDAB is designated a nonattainment area for the NAAQS for ozone and for the CAAQS for ozone, PM_{10}, and $PM_{2.5}$. Development of the proposed project along with cumulative projects in the region would have the potential to result in new, temporary sources of particulate matter and ozone precursors from construction activities. Cumulative projects would include projects in the unincorporated County that

propose General Plan amendments, large developments proposed on U.S. Forest Service or reservation lands (i.e., Viejas Reservation or Sycuan Reservation) adjacent to the Alpine CPA, and other projects in adjacent jurisdictions (e.g.., City of El Cajon). Development of large projects or multiple projects simultaneously and in close proximity to development associated with the proposed project could result in exceedances of the County SLTs for particulate matter and ozone precursors. In addition, the operation of proposed residential units would result in particulate matter and ozone emissions from off-road equipment, vehicles, and fugitive dust from surface disturbance. The SDAB is already in nonattainment for ozone, PM_{10}, and $PM_{2.5}$, therefore, implementation of the Alpine CPU would result in pollutants which would be cumulatively considerable. The project would result in a potentially significant impact associated with construction and operations related to nonattainment of criteria air pollutants. Therefore, the project would result in a **potentially significant cumulative impact** associated with the nonattainment of criteria pollutants (Impact C-AQ-2).

The cumulative contribution to ozone precursors and PM_{10} and $PM_{2.5}$, could result in an increase in ambient concentrations of ozone and particulate matter in the SDAB and, moreover, increase the likelihood that ambient concentrations exceed the CAAQS and NAAQS. This increase in ambient concentrations could result in increased acute and chronic health impacts; however, it would be misleading to correlate the level of cumulative criteria air pollutant and precursor emissions associated with the Alpine CPU to specific health outcomes for sensitive receptors. Therefore, other than determining the types of health effects that could occur, it would be speculative to more specifically correlate exposure to criteria air pollutants against the County SLTs, with the understanding that such thresholds are intended to apply to individual projects, it is conservatively possible that health complications associated with ozone and particulate matter could be exacerbated by cumulative operational emissions.

2.3.5.3 Issue 3: Expose Sensitive Receptors to Substantial Pollutant Concentrations

Cumulative impacts associated with sensitive receptors would occur if development within the Alpine CPA or other cumulative projects would expose sensitive receptors to cumulative concentrations of TACs. Though the Alpine CPU would increase construction activities beyond what was proposed under the 2011 General Plan, minimal exposure to diesel PM during construction activities would occur due to the dispersive nature of diesel PM and the limited time during which diesel PM is emitted at a single location. Further, this a portion of this future construction would have been anticipated in the General Plan analysis and could occur regardless of implementation of the proposed project. While the placement of new sensitive receptors near existing TAC emissions would be outside of the scope of this analysis, the buildout of the Alpine CPU could result in increased emissions of TACs that exacerbate an existing risk. The Alpine CPU would allow for the development of new residential developments within 500 feet of I-8, which could be exposed to additional sources of TACs from new vehicles and trucks (generated by new development under the Alpine CPU or by cumulative projects in the region) operating along the nearby roadway. New non-residential developments would have the potential to result in permanent increases in truck trips to the area due to operation. Cumulative projects developed in the surrounding vicinity, outside of the Alpine CPA, could also increase this risk; however, these cumulative developments are unknown. Because specific development details and health risk is unknown, and the potential for future development to exacerbate existing TAC exposure to sensitive receptors located along roadways with high traffic volumes, the project would result in a **potentially significant cumulative impact** (Impact C-AQ-3).

2.3.5.4 Issue 4: Result in Other Emissions (Odors) Affecting a Substantial Number of People

Cumulative impacts associated with odors would occur if odors within the Alpine CPA would combine with surrounding odor producing land uses or place sensitive receptors near existing odor sources. Similar to projects proposed in the unincorporated County and incorporated cities in San Diego, projects proposed under the Alpine CPU would be subject to SDAPCD's odor reduction Rule 51. Residential uses proposed under the Alpine CPU are not considered new sources of odors. However, non-residential land uses proposed would be subject to odor minimization requirements from daily operational activities, regulated by SDAPCD and LEA, where applicable. All projects in the Alpine CPA and surrounding vicinity would be required to comply with SDAPCD nuisance rules, enforcement of which is complaint based. Any individual that is experience an odor nuisance as a result of the construction or operation of the project in the Alpine CPA or surrounding vicinity could file a complaint with SDAPCD that would be investigated. Individual projects proposed under the Alpine CPU would be subject to Rule 51 and other SDAPCD and County regulations to reduce odor related impacts to sensitive receptors. Therefore, the project would result in a **less than significant cumulative impact**.

2.3.6 Significance of Impacts Prior to Mitigation

The project would result in potential significant direct and cumulative impacts to air quality. The following summarizes the potentially significant impacts that would result from implementation of the project prior to mitigation.

Impact-AQ-1: Conflict with Air Quality Plans. Due to increased development densities proposed in the Alpine CPA which are not consistent with the RAQS and SIP, the proposed project would cause a more severe potentially significant impact related to plan consistency compared to the prior EIR. This would be considered a significant impact.

Impact-AQ-2: Result in a Cumulatively Considerable Increase in Nonattainment Pollutant. Due to the increase in construction and operation emissions from increased development proposed by the Alpine CPU the project would cause a potentially significant impact related to nonattainment criteria air pollutants. Due to the increased density proposed, the project would result in a more severe impact than the prior EIR and mitigation is therefore required.

Impact-AQ-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations. Due to project-specific construction and operation details being unknown, the proposed project would cause a potentially significant impact related to sensitive receptors. Due to the potential for exacerbated pollutant exposure, the project would result in a more severe impact than the prior EIR and mitigation is therefore required.

Impact-C-AQ-1: Result in a Cumulatively Considerable Conflict with Air Quality Plans. The proposed project would cause a more severe potentially significant cumulative impact related to air quality plan consistency compared to the prior EIR. Therefore, the proposed project's contribution to this impact would be cumulatively considerable.

Impact-C-AQ-2: Result in a Cumulatively Considerable Increase in Nonattainment Pollutant from Cumulative Projects. Similar to the 2011 General Plan, the proposed project would cause a potentially significant cumulative impact related to nonattainment criteria air pollutants. Due

to the increased density proposed, the project would result in a more severe impact than the prior EIR and mitigation is therefore required.

Impact-C-AQ-3: Result in a Cumulatively Considerable Exposure of Sensitive Receptors to Substantial Pollutant Concentrations. Similar to the 2011 General Plan, the proposed project would cause a potentially significant cumulative impact related to sensitive receptors. This would be considered a significant impact. Due to the potential for exacerbated pollutant exposure, the project would result in a more severe impact than the prior EIR and mitigation is therefore required.

2.3.7 Mitigation

2.3.7.1 Issue 1: Conflict with Air Quality Plans

For the reasons described above, implementation of the following 2011 General Plan EIR mitigation measures and 2011 General Plan policies presented in Section 2.3.2.3 would reduce the project's direct and cumulative impacts related to conflict with an air quality plan. Compliance with applicable air quality plans is primarily determined through consistency with forecasts used to develop the RAQS and SIP. These plans are updated in cycles and include existing land uses and land use changes known and proposed at the time of the update. Projects or plans that are developed between update cycles would not be accounted for in the exiting RAQS and SIP forecasts. However, these projects would be included in future RAQS and SIP during the update cycle following project or plan approval. These updates typically occur as directed by CARB in response to criteria air pollutant monitoring compliance and would not occur as the result of a single plan or project. Because no further feasible mitigation is available, the project's impact would not be reduced below a level of significance. Therefore, impacts would be **significant and unavoidable** (Impact-AQ-1, Impact C-AQ-1).

2011 General Plan EIR Mitigation Measures

Implementation of the 2011 General Plan EIR mitigation measures (see Appendix B, 2011 General Plan EIR Mitigation Measures) would reduce the proposed project's impacts to conflicts with air quality plans.

Alpine CPU Mitigation Measures

No feasible mitigation is available for project implementation beyond those included in the 2011 General Plan EIR. Following the adoption of Alpine CPU, the County will coordinate with SANDAG and SDAPCD to ensure future growth associated with the project is incorporated into subsequent updates of the RAQS and SIP.

2.3.7.2 Issue 2: Result in a Cumulatively Considerable Increase of Nonattainment Criteria Air Pollutants

As discretionary projects are submitted, CEQA review would be completed which may require a formal study that would analyze impacts and identify project-specific mitigation measures to reduce impacts. In addition, the following 2011 General Plan EIR mitigation measures and mitigation measures specific to the Alpine CPU in combination with the 2011 General Plan policies presented in Section 2.3.2.3 would reduce the project's direct and cumulative impacts related to air quality violations. However, because future construction and operations of individual developments are unknown, impacts would be **significant and unavoidable** (Impact-AQ-2, Impact C-AQ-2).

2011 General Plan EIR Mitigation Measures

Implementation of the 2011 General Plan EIR mitigation measures (see Appendix B, 2011 General Plan EIR Mitigation Measures) would reduce the proposed project's impacts to conflicts with air quality plans.

Infeasible Mitigation Measures

As part of the preparation of the 2011 General Plan EIR, the County determined that the following measures were infeasible. these measures have been reviewed and again been deemed infeasible for the proposed project and will not be implemented.

- Prohibit new development that would result in emissions from new vehicle trips that would exceed the SLTs.
- Explanation: This measure would result in restrictions on future development in areas identified for increased growth in the 2011 General Plan because, with current vehicle emissions standards, it would severely limit development densities. This would conflict with the project's objective to support a reasonable share of projected regional population growth, because it would prohibit new development in the unincorporated County. In addition, if vehicle trips exceed SLTs but a project is not proposing densities greater than what was expected by the General Plan, those trips are accounted for in the RAQS and this does not automatically mean the actual ambient air quality standards will be exceeded.
- Encourage the construction of new development that would result in a reduction of vehicle trips because developers are able to demonstrate that they tie into an existing or planned alternative transportation network, such as transit (bus, train, or trolley), bicycle network, walkways, and trails.
- Explanation: This measure would result in restrictions on future development in areas identified for increased growth in the 2011 General Plan because not all areas of planned growth have an existing or planned alternative transportation network that new development could tie into. In addition, the County does not have control over where new transit lines are planned. Implementation of this mitigation measure would conflict with the proposed project's objective to reinforce the vitality, local economy and individual character of existing communities by restricting future development to areas with existing alternative transportation networks, which excludes many rural areas.
- Require all applicants to provide on-site renewable energy systems, including solar, wind, geothermal, low-impact hydro power, biomass, and biogas.
- Explanation: This measure would not be feasible because all applicants may not be able to provide renewable energy systems at all proposed locations due to size or building constraints. In addition, some energy systems may trigger additional regulatory requirements from the California Public Utilities Commission or CEC that would make individual projects infeasible to construct. Implementation of this measure would potentially increase infrastructure costs, which would conflict with the proposed project's objective to minimize public costs of infrastructure and services.
- Install vegetated roofs that cover at least 50 percent of roof area.
- Explanation: This measure would be infeasible because residential and commercial buyers may find vegetated roofs to be undesirable, and it places the burden of developing the vegetated roof

on the project applicant. The measure may also add additional monitoring requirements on the County to verify that vegetated roofs are properly maintained.

- Provide a spur at nonresidential projects to use nearby rail for goods movement.
- Explanation: This measure would not be feasible because it would depend on the rail system and the availability of rail transit to individual projects, most of which would not be located near railroad networks. Implementation of this measure would conflict with the proposed project's objective to ensure that development accounts for physical constraints, since much of the unincorporated County has limited access to the existing rail system.
- Require the use of locally made building materials for construction projects.
- Explanation: This measure would not be feasible because it would severely limit development projects, as some specialized building materials for projects may not be available locally. The measure would also require the County to monitor and enforce building material purchases at construction projects within its jurisdiction, which it does not have the funding or staffing available to accomplish.

Alpine CPU Mitigation Measures

Construction Mitigation Measures

MM-AQ-1: Require construction contractors to use high-performance renewable diesel (HPRD) fuel for diesel-powered construction equipment. Exemptions can be made for where HPRD is not commercially available within 200 miles of the Alpine CPA, or where the use of HPRD would not be economically feasible for use in project construction. The construction contract must document their unavailability or demonstrate economic burden to receive exemption from this requirement. Any HPRD product that is considered for use by the construction contractor shall comply with California's Low Carbon Fuel Standards. HPRD fuel must meet the following criteria:

- Be hydrogenation-derived (reaction with hydrogen at high temperatures) from 100 percent biomass material (i.e., nonpetroleum sources), such as animal fats and vegetables,
- contain no fatty acids or functionalized fatty acid esters, and
- have a chemical structure that is identical to petroleum-based diesel which ensures HPRD will be compatible with all existing diesel engines; it must comply with American Society for Testing and Materials D975 requirements for diesel fuels.

MM-AQ-2: Require construction contractors to minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site.

MM-AQ-3: Require construction contractors to stagger the scheduling of construction activities to avoid the simultaneous operation of construction equipment to minimize criteria pollutant levels resulting from operation of several pieces of emissions-intensive equipment, to the extent feasible.

MM-AQ-4: Require construction contractors to reduce construction-related exhaust emissions by ensuring that all off-road equipment greater than 50 horsepower and operating for more than 20 total hours over the entire duration of construction activities shall operate on at least an EPA-approved Tier 3 or newer engine. Exemptions can be made for specialized equipment where Tier 3 engines are not commercially available within 200 miles of the Alpine CPA. The construction contract must identify these

pieces of equipment, document their unavailability, and ensure that they operate on no less than an EPA-approved Tier 2 engine.

MM-AQ-5: Require construction contractors to maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

MM-AQ-6: Require construction contractors to implement and comply with the following fugitive dust control practices.

- Reduce fugitive dust from disturbed soil areas by: watering exposed soil with adequate frequency for continued moist soil (without overwatering to the extent that sediment flows off the site); suspending excavation, grading, and/or demolition activity when wind speeds exceed 20 miles per hour; installing wind breaks (e.g., trees or solid fencing) on windward side(s) of construction areas; and planting vegetative ground cover (fast-germinating native grass seed) in disturbed areas.
- Reduce fugitive dust from unpaved roads by: installing wheel washers for all existing trucks, or washing off all trucks and equipment leaving the site; treating site access to a distance of 100 feet from the paved road with a six- to 12-inch layer of wood chips, mulch, or gravel; and posting a publicly visible sign with the telephone number and a person to contact at the lead agency regarding dust complaints.

MM-AQ-7: Require construction contractors to reduce construction-related fugitive VOC emissions by ensuring that low-VOC coatings that have a VOC content of 10 grams/liter or less are used during construction. The construction contract must demonstrate of the use of low-VOC coatings and be submitted to SDAPCD prior to the start of construction.

Operation Mitigation Measures

MM-AQ-8: Prohibit the installation of wood burning stoves or fireplaces in discretionary residential developments. All stoves and fireplaces installed in proposed discretionary residential developments must be natural gas or electric.

MM-AQ-9: Require all new residential and commercial developments to include accessible outdoor outlets in the project design to facilitate the use of electricity-powered landscaping equipment.

MM-AQ-10: Require the provision of educational materials for residential and commercial tenants concerning green consumer products and electric powered landscaping equipment. Prior to receipt of any certificate of final occupancy, the project sponsors shall work with the County to develop electronic correspondence to be distributed by email to new residential and commercial tenants that encourages the purchase of consumer products that generate lower than typical VOC emissions. Examples of green products may include low-VOC architectural coatings, cleaning supplies, and consumer products, as well as alternatively fueled landscaping equipment. The correspondence will also discuss the air quality and public health benefits of using electric powered landscaping equipment over conventional gasoline-powered equipment.

MM-AQ-11: Encourage water heaters in new residential developments to be either solar, electrically powered, or tankless gas.

MM-AQ-12: Require all non-residential projects to prepare a Transportation Demand Management (TDM) plan that focuses on reducing vehicle trips during commute hours. Project applicants shall

coordinate with the County on project-specific requirements for a TDM plan related to a County TDM Ordinance, if adopted, or similar requirement. In lieu of an adopted TDM Ordinance at the County-level, projects should develop a TDM program that includes trip reduction policies supported by the SANDAG *Mobility Management Guidebook* (SANDAG 2019) or the CAPCOA *Quantifying Greenhouse Gas Mitigation Measures* (CAPCOA 2010). Any TDM plans that developed outside of compliance with a County-adopted ordinance will be reviewed and approved by the County.

MM-AQ-13: Require all new County-owned and -operated buildings proposed within the Alpine CPA to achieve zero net energy. Additionally, all landscaping equipment used at County owned and operated buildings and managed landscaped areas would be all electric.

Mitigation Analysis

Mitigation Measures **MM-AQ-1** through **MM-AQ-7** would reduce construction-related emissions of criteria air pollutants. Specifically, these mitigation measures would result in reductions in the emissions of particulate matter, NO_X, and VOCs from construction activities. However, because the type and intensity of future construction activities are unknown at this time, the project would result in significant direct and cumulative impacts from construction-related emissions with implementation of mitigation measures.

To reduce emissions from operations, Mitigation Measures MM-AQ-8 through MM-AQ-13 would be required for all development proposed under the Alpine CPU. Mitigation Measures MM-AQ-8 through MM-AQ-13 would reduce emissions from natural wood burning fireplaces in residential units, consumer products and landscaping equipment, water heating, and vehicle use. While methods for estimating criteria air pollutant emissions may exist for the construction and operational mitigation measures, not all were quantified for various reasons. Quantification of all construction mitigation measures is not feasible due to the unknown timeline for which construction of projects in the Alpine CPA would occur and the intensity for construction activities associated with individual projects. Further quantification for some operational mitigation measures is not feasible due to the currently unknown level to which mitigation measures would reduce criteria air pollutant emissions, the level to which the mitigation measure would be applied to a specific project, and the time at which a project would be developed. Based on the mitigation measures and the constraints for feasibly quantifying reductions from them, only reductions of criteria air pollutants from the implementation of MM-AQ-8 was quantified in Table 2.3-11. The application of this mitigation measure would result in relatively significant reductions of operational VOC emissions by prohibiting the installation of wood burning fireplaces and stoves in new developments.

As shown in Table 2.3-10, application of mitigation measure MM-AQ-8 would reduce estimated emissions of criteria air pollutants. However, buildout under the proposed project and the increased density and intensity proposed is still anticipated to exceed County SLTs under mitigated conditions. Therefore, the impact would remain significant and unavoidable.

Table 2.3-11. Modeled Maximum Daily Emissions of Criteria Air Pollutants and Precursors Emissions (lb/day) Associated with the *Mitigated* Alpine CPU Buildout

	lb/day					
Source	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Alpine CPU						
Natural Gas Usage	9	76	42	<1	6	6
Architectural Coating	74	<1	<1	<1	<1	<1
Consumer Products	488	<1	<1	<1	<1	<1
Hearth	10,207	309	13,811	28	1,970	1,970
Landscaping	32	12	1,043	<1	6	6
Mobile	257	586	2,970	10	196	81
Total	11,067	984	17,865	38	2,178	2,062
Net Change from Unmitigated Proposed Project Emissions	9,140	69	10,072	16	1,379	1,379
Exceed Significant Threshold?	Yes	No	Yes	No	Yes	Yes
Significance Threshold	75	250	550	250	100	55

Source: Appendix D

lb/day = pounds per day VOC = volatile organic compound NO = oxides of nitrogen CO = carbon monoxide

SOx = oxides of sulfur PM_{10} = respirable particulate matter $PM_{2.5}$ = fine particulate matter

Notes: Totals may not add exactly due to rounding. Emissions from industrial sources were modeled in separate CalEEMod files to show no increase in industrial uses beyond existing conditions. Details are shown in Appendix D.

2.3.7.3 Issue 3: Expose Sensitive Receptors to Substantial Pollutant Concentrations

The following 2011 General Plan EIR mitigation measures and mitigation measures specific to the Alpine CPU in combination with the 2011 General Plan policies would reduce the project's exposure of sensitive receptors. However, due to construction and operational details being unknown, sensitive receptor exposure should be analyzed on a project-by-project bases. Therefore, impacts would be **significant and unavoidable** (Impact-AQ-3, Impact C-AQ-3).

2011 General Plan EIR Mitigation Measures

Implementation of the 2011 General Plan EIR mitigation measures (see Appendix B, 2011 General Plan EIR Mitigation Measures) would reduce the proposed project's impacts to conflicts with air quality plans.

Infeasible Mitigation Measures

As part of the preparation of the 2011 General Plan EIR, the County determined that the following measures were infeasible; these measures have been reviewed and again been deemed infeasible for the proposed project and will not be implemented.

- Require that all off-road or non-road diesel engines, such as those associated with construction or extraction operations, be replaced by an alternative power source, such as electricity.
- Explanation: This measure would limit which construction contractors would be allowed to work within the County because not all contractors have alternative power source equipment available and the measure could result in undue costs to the project applicant. Limiting the construction contractors allowed to work within the unincorporated County would protect individual character of existing communities while balancing housing, employment and recreational opportunities. In addition, the County cannot monitor and enforce all construction activities within its jurisdiction due to funding and staffing deficiencies and ultimately because CARB has the responsibility of regulating emissions from off-road construction equipment.
- Require all diesel trucks that travel on County roads to be equipped with filters or other devices that would limit diesel emissions to below a significant level.
- Explanation: This measure is considered to be infeasible because the County cannot monitor all diesel traffic within its jurisdiction due to funding and staffing deficiencies and ultimately because CARB has the responsibility of regulating emissions from vehicles. Implementing this measure would result in increased public costs, which would conflict with the proposed project's objective to minimize public costs of infrastructure and services.

Alpine CPU Mitigation Measures

MM-AQ-13 Require projects that propose to develop sensitive receptors within 500 feet of an existing freeway and are determined to have the potential to exacerbate existing TAC-related health risks to prepare a qualified, site-specific health risk assessment (HRA). The HRA shall be conducted in accordance with County guidance and reviewed by both the County and SDAPCD. If the HRA determines that the proposed project would exacerbate an existing health risk to the extent that a nearby sensitive receptor would be exposed to an incremental increase in cancer risk greater than 10 in 1 million, then design measures shall be incorporated to reduce the level of risk exposure to less than 10 in 1 million. No further action shall be required if the HRA demonstrates that the level of cancer risk would be less than 10 in 1 million.

2.3.7.4 Issue 4: Result in Other Emissions (Odors) Affecting a Substantial Number of People

Direct and cumulative impacts related to emissions of odors are less than significant.

Adopted 2011 General Plan EIR Mitigation Measures

No mitigation measures were identified for odor-related impacts.

Alpine CPU Mitigation Measures

No additional mitigation measures are required.

2.3.8 Conclusion

2.3.8.1 Issue 1: Conflict with Air Quality Plans

Implementation of the Alpine CPU would increase projected growth from the 2011 General Plan. Due to the increase in residential development and commercial uses, a net increase in VMT is projected from the 2011 General Plan Update. It is estimated that the proposed project would result in an incremental increase in daily VMT, which was not considered in the regional growth projections based on the 2011 General Plan Update. Because the 2011 General Plan was used to inform project growth in the RAQS and SIP, the proposed project would be inconsistent with these relevant air quality plans. The proposed project's conflict with the RAQS and SIP would result in a potentially significant impact with air quality plans (Impact-AQ-1). In addition, because the proposed project is inconsistent with the RAQS and SIP, combining additional growth from future development in the surrounding communities would cumulatively impact air quality plan consistency (Impact-C-AQ-1). Because the County's growth projects may not be updated prior to construction of future proposed projects under the Alpine CPU, Impact-AQ-1 and Impact-C-AQ-1 would be **significant and unavoidable**. Therefore, the impact would be more severe than the prior EIR.

2.3.8.2 Issue 2: Result in Cumulatively Considerable Increase of Nonattainment Criteria Air Pollutants

Implementation of the Alpine CPU would increase construction and operational activities compared to the 2011 General Plan. Because project-specific construction-related activities are unknown, construction emissions are expected to exceed County SLTs. Full build out of the Alpine CPU is also expected to result in an exceedance of the County's SLTs. As such, the proposed project would have the potential to result in potentially significant and cumulative impacts associated with nonattainment criteria air pollutants and would result in adverse health impacts (Impact AQ-2). Due to the construction and operational activities exceedance of the County's SLTs, when combined with other projects in the surrounding communities, a cumulatively considerable impact would occur (Impact C-AQ-2). Implementation of the 2011 General Plan EIR mitigation measures and 2011 General Plan policies, along with Alpine CPU Mitigation Measures MM-AQ-1 through MM-AQ-13 would reduce construction and operational emissions. As noted previously, only mitigation measure MM-AQ-8 could be feasibility quantified and would substantially reduce emissions of criteria air pollutants in the Alpine CPA. While this mitigation measure would result in a decrease in estimated pollutant emissions, it would not reduce impacts to a less than significant level. Impact-AQ-2 and Impact-C-AQ-2 would be **significant and unavoidable**, similar to the prior EIR.

2.3.8.3 Issue 3: Expose Sensitive Receptors to Substantial Pollutant Concentrations

Implementation of the Alpine CPU would result in the increase in construction activities from the 2011 General Plan and increased vehicle and truck trips associated with future residential and non-residential uses resulting in increased exposure of sensitive receptors to pollutants generated from on-road vehicles. Therefore, this would be considered a new significant impact of the proposed project (Impact-AQ-4). Additionally, when combined with the future growth and development in adjacent communities, the proposed project's contribution to this impact would be cumulatively considerable and would be considered a cumulative impact of the proposed project (Impact-C-AQ-4). Implementation of the adopted 2011 General Plan policies, the 2011 General Plan EIR mitigation measures, and Alpine CPU Mitigation Measures MM-AQ-13 would reduce Impact-AQ-4 and Impact-C-AQ-4. However, due to project level details

and health risk associated with proposed development being unknown, Impact-AQ-3 and Impact-C-AQ-3 would be **significant and unavoidable**, similar to the prior EIR.

2.3.8.4 Issue 4: Result in Other Emissions (Odors) Affecting a Substantial Number of People

Implementation of the Alpine CPU would not have the potential to affect a substantial number of people with adverse odors, and impacts would be less than significant. Additionally, the Alpine CPU would not contribute to a significant cumulative impact. Impacts related to the generation of odors would be **less than significant**, similar to the prior EIR.

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