

Draft

WILDHAVEN YOSEMITE COMMERCIAL, INDUSTRIAL, & MANUFACTURING SITE PLAN (CIM) APPLICATION

Air Quality and Greenhouse Gas Technical Memorandum

Prepared for
Wildhaven Yosemite

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550 Kearny Street
Suite 800
San Francisco, CA 94108
415.896.5900
esassoc.com



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WILDHAVEN YOSEMITE COMMERCIAL, INDUSTRIAL, & MANUFACTURING SITE PLAN (CIM) APPLICATION

Air Quality and Greenhouse Gas Technical Memorandum

1. Introduction

This technical memorandum describes and evaluates the potential for the construction and operation of the Wildhaven Yosemite Project (proposed project) to result in significant air quality and greenhouse gas impacts. The proposed project includes two phases of construction followed by operation of an 80-tent luxury campsite located at the 36-acre Yosemite Ziplines and Adventure Ranch property at 4808 CA-140, Mariposa, CA 95338 (APN 012-180-0560). In addition to the 80 proposed platform tents, the site would also include a bathhouse, reception kiosk, on-site water and sewer, parking areas, and other support facilities.

The analysis includes a discussion of existing air quality conditions in the project area, existing greenhouse gas emissions within Mariposa County (County), the regulatory framework for air quality and greenhouse gas (GHG) emissions management, and the potential for the proposed project to affect air quality conditions and contribute to global climate change. The section addresses both regional and local impacts due to activities that emit criteria and non-criteria air pollutants. It also analyzes the types and quantities of emissions that would be generated on a temporary basis due to proposed construction activities as well as those generated over the long term from the operation of the proposed project. The analysis determines whether those emissions are significant in relation to applicable air quality and greenhouse gas standards, and ultimately identifies feasible mitigation measures to address significant adverse impacts.

The analysis in this section is based on a review of the existing air quality conditions in the region and the air quality and greenhouse gas regulations administered by the United States Environmental Protection Agency (U.S. EPA), the California Air Resources Board (CARB), and the Mariposa County Air Pollution Control District's (MCAPCD's) California Environmental Quality Act (CEQA) Thresholds of Significance.

2. Environmental Setting

The proposed project is located in the Mariposa County which is within the Mountain Counties Air Basin (MCAB), under the jurisdiction of the MCAPCD. In addition to Mariposa County, the

MCAB encompasses Plumas County, Sierra County, Nevada County, Amador County, Calaveras County, and Tuolumne County, as well as portions of El Dorado County and Placer County.

2.1 Climate and Topography

The MCAB has a variable climate characterized by high precipitation in the mountain ranges and lower moisture levels towards the western boundary of the air basin. Due to the wide range of elevations, temperatures vary throughout the air basin within distinct microclimates. During the summer, temperatures in the mountains range from 70 to 80 degrees Fahrenheit, whereas temperatures in the western parts of the air basin can exceed 100 degrees Fahrenheit. In the winter, temperatures in the mountain ranges are generally below freezing, while temperatures in the western portion of the MCAB typically fall below 32 degrees Fahrenheit only at night (EDCAQMD, 2002).

The MCAB includes topographic features that regulate the climate including the northern Sierra Nevada Mountains. These mountain ranges and elevation variations hinder dispersion and can create meteorological conditions leading to high pollutant concentrations. During the summer, the MCAB receives a strong upwind flow of air from the Central Valley that transfers and deposits ozone precursors and ozone emissions from the Bay Area, the Sacramento Valley, and the San Joaquin Valley. The vertical and horizontal movement of air is an important atmospheric component involved in the dispersion and subsequent dilution of air pollutants. Without movement, in highly stable conditions, air pollutants can collect and concentrate in a single area, increasing the associated health hazards. Topographic conditions within the MCAB hinder dispersion of air pollutants and cause shallow vertical mixing which leads to high pollutant concentrations. The air basin also experiences inversion layers that restrict the vertical dispersion of pollutants released near ground level and can lead to localized increases in carbon monoxide (CO) concentrations during the winter (EDCAQMD, 2002).

2.2 Air Pollutants of Concern

Air pollutants of concern within the MCAB include criteria air pollutants and toxic air contaminants (TACs), along with GHGs which are discussed in a separate section below.

Criteria Air Pollutants

Criteria air pollutants are a group of six common air pollutants for which the U.S. EPA has set ambient air quality standards. Criteria air pollutants include ground-level ozone, carbon monoxide (CO), nitrogen dioxide (NO_x), sulfur dioxide (SO₂), particulate matter (PM) in size fractions of 10 microns or less in diameter (PM₁₀) and 2.5 microns or less in diameter (PM_{2.5}), and lead. Most of the criteria air pollutants are directly emitted; however, ozone is a secondary pollutant that is formed in the atmosphere by chemical reactions between nitrogen oxides (NO_x) and reactive organic gases (ROG). In addition to the criteria air pollutants that have been identified by the U.S. EPA, California has identified four criteria air pollutants (visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride).

Criteria air pollutants of concern in the Mariposa County include ozone, PM_{2.5}, and PM₁₀, as concentrations of these pollutants exceed either state standards, federal standards, or both. Concentrations of CO, NO₂, SO₂, lead, hydrogen sulfide, sulfates, vinyl chloride, and visibility reducing particles are below the state and national air quality standards in Mariposa County, according to the CARB Maps of State and Federal Area Designations (CARB, 2018; CARB, 2019).

Ground-Level Ozone

As discussed above, ground-level ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving ozone precursors – ROG (also referred to as volatile organic compounds [VOC]) and NO_x. The main sources of ROG in the MCAB are the evaporation of solvents, paints, and fuels; and the main sources of NO_x are combustion processes (including motor vehicle engines). Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through a photochemical reaction process.

Ozone causes eye irritation, airway constriction, and shortness of breath, and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. People most at risk from breathing air containing ozone include people with asthma, children, older adults, and people who are active outdoors, especially outdoor workers. In addition, people with certain genetic characteristics, and people with reduced intake of certain nutrients, such as vitamins C and E, are at greater risk from ozone exposure. Breathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and airway inflammation. It also can reduce lung function and harm lung tissue. Ozone can worsen bronchitis, emphysema, and asthma, leading to increased medical care. Ozone also affects sensitive vegetation and ecosystems, including forests, parks, wildlife refuges and wilderness areas. In particular, ozone harms sensitive vegetation during the growing season (U.S. EPA, 2018a).

Particulate Matter

PM₁₀ and PM_{2.5} represent the fractions of PM that can be inhaled into air passages and the lungs and can cause adverse health effects. Some sources of PM, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect.

PM contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems. Of these, PM_{2.5} particles pose the greatest risk to health, because they can get deep into the lungs, and some may even enter the bloodstream (U.S. EPA, 2018b). Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Due to this increasing awareness of the health risks posed by PM_{2.5}, it is now more heavily regulated throughout California.

Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. This large dust is of more concern as a soiling nuisance rather than a

health hazard. PM_{2.5} is the main cause of reduced visibility (haze) in parts of the United States, including many national parks and wilderness areas.

Nitrogen Dioxide

NO₂ is a reddish brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO₂ emissions. Aside from its contribution to ozone formation, NO₂ can increase the risk of acute and chronic respiratory disease and reduce visibility. NO₂ may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels.

Carbon Monoxide

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicle engines; and the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Exposure of humans to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue, impaired central nervous system function, and angina (chest pain) in persons with serious heart disease. Very high concentrations of CO can be fatal.

Other Criteria Air Pollutants

Other criteria air pollutants include SO₂ and lead, which are not air pollutants of concern within the MCAB. SO₂ is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel. SO₂ is also a precursor to the formation of PM, atmospheric sulfate, and atmospheric sulfuric acid formation that could precipitate downwind as acid rain.

Leaded gasoline (phased out in the United States beginning in 1973), lead based paint (on older houses and cars), smelters (metal refineries), and manufacture of lead storage batteries have historically been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects, which puts children at special risk. Some lead-containing chemicals cause cancer in animals. Lead levels in the air have decreased substantially since leaded gasoline was eliminated. Ambient lead concentrations are only monitored on an as-warranted, site-specific basis in California.

Health Effects of Criteria Air Pollutants

In a 2018 decision (*Sierra Club v. County of Fresno*, 6 Cal.5th 502, also referred to as *Friant Ranch*), the California Supreme Court decided that CEQA requires disclosure of the potential for a project's emissions to affect human health when the project's criteria air pollutant emissions exceed applicable thresholds and contribute considerably to a significant cumulative impact. The decision requires EIRs to either (1) make a "reasonable effort" to substantively connect the estimated amount of a given air pollutant a project will produce and the health effects associated with that pollutant, or (2) explain why such an analysis is infeasible.¹ The Court also clarified that

¹ 6 Cal.5th at 510–511.

CEQA “does not mandate” that EIRs include “an in-depth risk assessment” that provides “a detailed comprehensive analysis . . . to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations and to assess and quantify both the individual and population wide health risks associated with those levels of exposure.”²

Health impacts from emissions of criteria air pollutants on sensitive receptors is difficult if not speculative to quantify. Typically, the health impact of a particular criteria pollutant is analyzed by air districts on a regional scale, based on how close the area is to attaining the ambient air quality standards. Because air districts’ attainment plans and supporting air quality modeling tools are regional in nature, they are not typically used to evaluate the impacts of individual projects on ambient concentrations of criteria air pollutants, or to correlate those impacts to potential resultant effects on public health. Furthermore, given that ozone is a secondary pollutant formed through a complex reaction between its precursors (i.e. NO_x and ROG) in the atmosphere with the presence of sunlight and meteorological conditions, the impacts of ozone are analyzed at a basin-wide or regional level rather than local (SCAQMD, 2014; SJVAPCD, 2014). The health-based ambient air quality standards for ozone are therefore the concentrations of ozone, not the mass emissions of their precursor pollutants NO_x and ROG. As the *amicus curiae* briefs submitted for the *Sierra Club v. County of Fresno* case suggested, because of the complexity of ozone formation, ozone concentrations, and the state of environmental science modeling in use at this time, it is infeasible to determine whether, or to what extent, a single project’s precursor (i.e., NO_x and ROG) emissions would potentially result in the formation of ground-level ozone, as well as when and where ground-level ozone would form.

As expressed in the *amicus curiae* brief submitted for the *Friant Ranch Case*, the CEQA significance thresholds for criteria pollutants from the air districts are set at emission levels tied to the region’s attainment status. As discussed further below, the proposed project would generate less than significant quantities of criteria pollutants ROG, NO_x, and particulate matter. Therefore, given that the proposed project would not exceed the mass emissions thresholds established by the MCAPCD, it is not likely that emissions from project-related activities will cause or contribute to the exposure of sensitive receptors to ground-level concentrations in excess of health-protective levels.

Existing Ambient Air Quality

Nearby ambient air quality monitoring stations that are representative of the ambient air quality in the project area is the Jerseydale monitoring station, the Yosemite Village-Visitor Center monitoring station, and the San Andreas-Gold Strike Road monitoring station. The Jerseydale monitoring station is located at 6440 Jerseydale Road in Mariposa, California, and is approximately 8.5 miles northeast of the project site; the Yosemite Village-Visitor Center is located 28 miles northeast of the project site; and the San Andreas-Gold Strike Road monitoring station is at 501 Gold Strike Road in San Andreas, California, approximately 64 miles northwest

² 6 Cal.5th at 521.

of the project site. The Jerseydale Road monitoring station monitors ozone, the Yosemite Village-Visitor Center monitors PM₁₀, and the Gold Strike Road monitoring station monitors PM_{2.5}.

TABLE 1
SUMMARY OF AIR QUALITY MONITORING DATA (2016–2019)

Pollutant	National / State Standard	2017	2018	2019
Ozone (Jerseydale monitoring station)				
Maximum 1-hour concentration, ppm	0.090 ^a	0.093	0.127	0.082
Number of days above State 1-Hour standard		0	2	0
Maximum 8-hour concentration, ppm (national/state)	0.070	0.083 / 0.084	0.084 / 0.088	0.074 / 0.074
Number of days above 8-Hour standard (national/state) ^d		10 / 12	11 / 15	5 / 5
Respirable Particulate Matter (PM₁₀) (Yosemite village-visitor center monitoring station)				
Annual average concentration, µg/m ³	20 ^a	*	*	*
Maximum 24-Hour concentration (national/state), µg/m ³	150 / 50	141.7 / 123.9	307.5 / 270.1	129.9 / 118.1
Measured number of days above National 24-Hour standard ^c		0	17	0
Measured number of days above State 24-Hour standard ^c		18	31	14
Fine Particulate Matter (PM_{2.5}) (San Andreas-Gold Strike Road monitoring station)				
Annual average concentration, µg/m ³	12.0 / 12.0	* / *	14.6 / *	5.5 / *
Maximum 24-Hour average concentration, µg/m ³	35 ^b	52.9	67.7	24.8
Measured number of days above National 24-Hour standard ^c		4	16	0

NOTES:

Number of days exceeded is for all days in a given year, except for particulate matter. PM₁₀ and PM_{2.5} are monitored every six days. Ozone monitoring data from Placerville-Golden Nugget Way Station. PM₁₀ monitoring data from San Andreas-Gold Strike Road monitoring station. PM_{2.5} monitoring data from the Colfax-City Hall monitoring station. The CARB and U.S. EPA use different methods to calculate the emissions for certain criteria air pollutants for comparisons to the state and national standards.

Bold values are in excess of applicable standard.

ppm = parts per million; µg/m³ = micrograms per cubic meter; NA = No data or insufficient data.

* mean there was insufficient data available to determine the value.

- State standard, not to be exceeded.
- National standard, not to be exceeded.
- Particulate matter sampling schedule of one out of every six days, for a total of approximately 60 samples per year. Estimated days exceeded mathematically estimates of how many days concentrations would have been greater than the level of the standard had each day been monitored.
- State and national statistics may differ because national 8-hour averages are truncated to three decimal places; state 8-hour averages are rounded to three decimal places; state criteria for ensuring that data are sufficiently complete for calculating 8-hour averages are more stringent than the national criteria.

SOURCE: CARB, 2020c.

Although the Yosemite Village-Visitor Center monitoring station usually monitors PM_{2.5} concentrations within the area of the project site, it did not report recent PM_{2.5} data for comparison to the national PM_{2.5} standards; therefore, the Gold Strike Road monitoring data was included in this analysis.

Toxic Air Contaminants

TACs are airborne substances designated by the State of California as capable of causing short-term (acute) and long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances and may be emitted from a variety of common sources including gasoline stations, automobiles, diesel engines, dry cleaners, industrial operations, and painting operations. TACs of concern, related to the proposed project, include diesel particulate matter (DPM) and asbestos.

Diesel Particulate Matter

The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and concentrations of DPM are higher near heavily traveled highways.

The CARB identified DPM as a TAC in 1998, primarily based on evidence demonstrating cancer effects in humans. It is estimated that about 70 percent of total known cancer risks related to air toxics in California are attributable to DPM. More than 90 percent of DPM is less than 1 μm in diameter, and thus is a subset of $\text{PM}_{2.5}$; therefore, DPM contributes to the same non-cancer health effects as exposure to $\text{PM}_{2.5}$ discussed above.

Regulation of diesel engines and fuels has decreased DPM levels by 68 percent since 1990. Furthermore, CARB estimates that emissions of DPM in 2035 will be less than half of that in 2010, even with increasing vehicle miles traveled (VMT) (CARB, 2016). Nonetheless, based on 2012 estimates of statewide exposure, DPM is estimated to increase statewide lifetime excess cancer risk by 520 cancers per million residents.

Asbestos

Asbestos is a TAC of concern, particularly in association with demolition of older buildings and structures. Asbestos is a fibrous material, which is both naturally occurring in ultramafic rock (a rock type commonly found in California) and is used as a processed component of building materials. Because asbestos has been proven to cause serious adverse health effects, including asbestosis and lung cancer, it is strictly regulated based on its natural widespread occurrence and its use as a building material. Geological mapping indicates that naturally occurring asbestos may be located in the vicinity of the project site (CDMG, 2000). Therefore, the proposed project would be required to comply with the regulations included in the CARB Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations, discussed further below (CARB, 2015).

Odors

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to 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.

People may have different reaction to the same odor and an odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. Known as odor fatigue, a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

Sensitive Land Uses

Air quality does not affect all individuals or groups within the population in the same way. Some groups are more sensitive to adverse health effects caused by exposure to air pollutants than others. Population subgroups sensitive to the health effects of air pollutants include the elderly, the young, those with higher rates of respiratory disease such as asthma and chronic obstructive pulmonary disease, and with other environmental or occupational health exposures (e.g., indoor air quality) that affect cardiovascular or respiratory diseases.

Land uses such as schools, children's daycare centers, hospitals, and nursing and convalescent homes are considered sensitive to poor indoor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress. Parks and playgrounds are considered moderately sensitive to poor air quality because persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality; however, exposure times are generally far shorter in parks and playgrounds than in residential locations and schools, which typically reduces the overall health risk associated with pollutant exposure. Residential areas are considered more sensitive to air quality conditions compared to commercial and industrial areas because people generally spend longer periods of time at their residences, with associated greater exposure to ambient air quality conditions. Workers are not considered sensitive receptors because all employers are required to follow regulations set forth by the Occupational Safety and Health Administration (OSHA) to ensure the health and well-being of their employees, including protecting them from air pollution.

The proposed project site is located in a rural area and is located more than 1,000 feet from the nearest residential receptor. There are also no schools, daycares, or convalescent homes within 1,000 feet of project site.

2.3 Greenhouse Gas Emissions and Climate Change

“Global warming” and “climate change” are common terms used to describe the increase in the average temperature of the Earth's near-surface air and oceans since the mid-20th century. Natural processes and human actions have been identified as impacting climate. Since the 19th century, increasing GHG concentrations resulting from human activity such as fossil fuel combustion, deforestation, and other activities are believed to be a major factor in climate change. GHGs in the atmosphere naturally trap heat by impeding the exit of solar radiation that has hit the Earth and is reflected back into space – a phenomenon sometimes referred to as the “greenhouse effect.” Some GHGs occur naturally and are necessary for keeping the Earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the

last 100 years have trapped solar radiation and decreased the amount that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

Carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) are the principal GHGs. When concentration of these gases exceed historical concentrations in the atmosphere, the greenhouse effect is intensified. CO₂ is the reference gas for climate change, as it is the GHG emitted in the highest volume. The effect that each of the GHGs have on global warming is the product of the mass of their emissions and their global warming potential (GWP). GWP indicates how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO₂. For example, CH₄ and N₂O are substantially more potent GHGs than CO₂, with GWPs of approximately 25 and approximately 298 times that of CO₂, which has a GWP of 1 (CARB, 2020a).

In emissions inventories, GHG emissions are typically reported as metric tons of CO₂ equivalents (MT CO₂e). CO₂e is calculated as the product of the mass emitted of a given GHG and its specific GWP. While CH₄ and N₂O have much higher GWPs than CO₂, CO₂ is emitted in higher quantities and it accounts for the majority of GHG emissions in CO₂e, both from developments and human activity in general.

Effects of Climate Change on the Environment

Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, an increase in high ground-level ozone days, larger forest fires, and increased drought in some parts of the state. Secondary effects are likely to include the displacement of thousands of coastal businesses and residences (as a result of sea level rise), impacts on agriculture, changes in disease vectors, and changes in habitat and biodiversity. Global warming has and could continue to cause detrimental effects to some of the state's largest industries including agriculture. In 2015, drought conditions cost agriculture in California's Central Valley approximately 2.7 billion dollars and 20,000 jobs (CARB, 2017b). The *2017 Scoping Plan Update* states that "climate change is contributing to an escalation of serious problems, including raging wildfires, coastal erosion, disruption of water supply, threats to agriculture, spread of insect-borne diseases, and continuing health threats from air pollution ... Climate change is making events like these more frequent, more catastrophic, and costlier. Climate change impacts all Californians, and the impacts are often disproportionately borne by the states most vulnerable and disadvantaged populations" (CARB, 2017b).

Ecosystem and Biodiversity Impacts

Climate change is expected to have effects on diverse types of ecosystems. As temperatures and precipitation change, seasonal shifts in vegetation will occur; this could affect the distribution of associated flora and fauna species. The IPCC states that "a large fraction of both terrestrial and freshwater species faces increased extinction risk under projected climate change during and beyond the 21st century, especially as climate change interacts with other stressors, such as habitat modifications, over exploitation, and invasive species" (IPCC, 2014a). Forest dieback poses risks to carbon storage, biodiversity, wood production, water quality, and economic activity. Wildfires,

which are an important control mechanism in many ecosystems, are becoming more severe and more frequent, making it difficult for native plant species to repeatedly re-germinate. Continued emission of GHGs will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive, and irreversible impacts for people and ecosystems (IPCC, 2014b).

Human Health Impacts

Climate change will likely increase the risk of vector-borne infectious diseases, particularly those found in tropical areas and spread by insects such as malaria, dengue fever, and encephalitis. Cholera, which is associated with algal blooms, could also increase. While these health effects would largely affect tropical areas in other parts of the world, effects would also be felt in California. Warming of the atmosphere would be expected to increase smog and particulate pollution, which could adversely affect individuals with heart and respiratory problems, such as asthma. Extreme heat events and wildfires would also be expected to occur with more frequency and could adversely affect the elderly, children, and the homeless. Finally, the water supply impacts and seasonal temperature variations expected as a result of climate change could affect the viability of existing agricultural operations, making the food supply more vulnerable (USGCRP, 2016).

Greenhouse Gas Emissions Estimates

There is international scientific consensus that human-caused increases in GHGs have contributed and will continue to contribute to global warming. Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO₂ emissions (and thus substantial increases in atmospheric concentrations of CO₂). In 1994, atmospheric CO₂ concentrations were found to have increased by nearly 30 percent above pre-industrial concentrations.

Global Emissions

Worldwide emissions of GHGs in 2019 was approximately 52.4 billion MT CO₂e (PBL Netherlands Environmental Assessment Agency, 2020). This includes both ongoing emissions from industrial and agricultural sources, but excludes effects of changes in carbon sinks and carbon sequestration from land use changes.

United States Emissions

In 2019, the United States emitted about 6,577.2 million metric tons (MMT) CO₂e. Of the four major emissions sectors – residential, commercial, industrial, and transportation – transportation accounts for the highest fraction of GHG emissions (approximately 26 percent); these emissions are generated from direct fossil fuel combustion (U.S. EPA, 2021).

State of California Emissions

In 2018, California produced approximately 425 MMT CO₂e. Combustion of fossil fuels in the transportation sector was the single largest source of California's GHG emissions in 2018,

accounting for 40 percent of total GHG emissions in the state. This sector is followed by the industrial sector (21 percent), and the electric power sector (including both in-state and out-of-state sources) (15 percent) (CARB, 2020b).

3. Regulatory Setting

3.1 Federal

Criteria Air Pollutants

The U.S. EPA is required by the federal Clean Air Act (CAA) to identify and establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. The U.S. EPA has set NAAQS for six principal pollutants, called criteria air pollutants. As discussed above, these criteria air pollutants include ozone, NO₂, SO₂, CO, PM, and lead. The original indicator for PM was total suspended particulates; currently, the standards are in terms of PM₁₀ and PM_{2.5}. **Table 2** presents the current NAAQS (and state ambient air quality standards) and provides a brief discussion of the principal sources for each pollutant.

TABLE 2
STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS AND MAJOR SOURCES

Pollutant	Averaging Time	State Standard	National Standard	Major Pollutant Sources
Ozone	1 hour	0.09 ppm	---	Formed when ROG and NO _x react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
	8 hour	0.070 ppm	0.070 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hour ¹	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO ₂)	1 hour	0.18 ppm	100 ppb	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
	Annual Avg.	0.030 ppm	0.053 ppm	
Sulfur Dioxide (SO ₂)	1 hour	0.25 ppm	75 ppb	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	3 hour	---	0.5 ppm ²	
	24 hour	0.04 ppm	0.14 ppm	
	Annual Avg.	---	0.030 ppm	
Respirable Particulate Matter (PM ₁₀)	24 hour	50 ug/m ³	150 ug/m ³	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	Annual Avg.	20 ug/m ³	---	
Fine Particulate Matter (PM _{2.5})	24 hour	---	35 ug/m ³	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NO _x , sulfur oxides, and organics.
	Annual Avg.	12 ug/m ³	12.0 ug/m ³	
Lead	Monthly Ave.	1.5 ug/m ³	---	Present source: lead smelters, battery manufacturing and recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	---	1.5 ug/m ³	

TABLE 2
STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS AND MAJOR SOURCES

Pollutant	Averaging Time	State Standard	National Standard	Major Pollutant Sources
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Geothermal power plants, petroleum production and refining
Sulfates	24 hour	25 ug/m ³	No National Standard	Produced by the reaction in the air of SO ₂ .
Visibility Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more	No National Standard	See PM _{2.5} .
Vinyl chloride	24 hour	0.01 ppm	No National Standard	Polyvinyl chloride and vinyl manufacturing.

NOTES:

1 A more stringent 8-hour carbon monoxide state standard exists around Lake Tahoe (6 ppm).

2 Secondary national standard.

ppb = parts per billion; ppm = parts per million; ug/m³ = micrograms per cubic meter.

SOURCES: CARB, 2016b; CARB, 2009.

The U.S. EPA classifies air basins (or portions thereof) as “attainment” or “nonattainment” for each criteria air pollutant, based on whether or not the NAAQS have been achieved in that area. The classification is determined by comparing actual monitoring data with the standards. “Unclassified” is defined by the federal CAA as any area that cannot be classified, on the basis of available information, as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant. Furthermore, an area may be designated attainment with a maintenance plan (also known as a maintenance area), which means that an area was previously nonattainment for a criteria air pollutant but has since been re-designated as attainment. These areas have demonstrated through modeling that they have sufficient controls in place to meet and maintain the NAAQS.

Mariposa County’s attainment status for the criteria air pollutants with respect to the federal and state standards is summarized in **Table 3**. As shown below, the County is considered to be a nonattainment area for the state ozone standards and the federal 8-hour ozone standard.

TABLE 3
MARIPOSA COUNTY ATTAINMENT STATUS

Pollutant and Averaging Time	Designation/Classification	
	State Standards	Federal Standards
Ozone (1-hour)	Nonattainment	No Federal Standard
Ozone (8-hour)		Nonattainment
Carbon Monoxide (CO)	Unclassified	Unclassified/Attainment
Nitrogen Dioxide (NO ₂)	Attainment	Unclassified/Attainment

Sulfur Dioxide (SO ₂)	Attainment	Unclassified/Attainment
Respirable Particulate Matter (PM ₁₀)	Unclassified	Unclassified
Fine Particulate Matter (PM _{2.5})	Unclassified	Unclassified/Attainment
Lead	Attainment	Unclassified/Attainment
Visibility Reducing Particles	Unclassified	No Federal Standard
Sulfates	Attainment	No Federal Standard
Hydrogen Sulfide	Unclassified	No Federal Standard

NOTES:

CARB makes area designations for ten criteria pollutants (ozone, CO, NO₂, SO₂, PM₁₀, PM_{2.5}, lead, visibility reducing particles, sulfates, and hydrogen sulfide). CARB does not designate areas according to the vinyl chloride standard.

-- Information not available

SOURCES: CARB, 2019; CARB, 2018.

The federal CAA requires each state to prepare an air quality control plan, referred to as a State Implementation Plan (SIP). The SIP is a living document that is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by the agencies with jurisdiction over them. The U.S. EPA has responsibility of reviewing all state SIPs to determine if they conform to the mandates of the federal CAA and will achieve air quality goals when implemented.

Hazardous Air Pollutants

Federal laws use the term “Hazardous Air Pollutants” (HAPs) to refer to the same types of compounds that are referred to as TACs under State law. Currently, 187 substances are regulated as HAPs. The federal CAA requires the U.S. EPA to identify National Emission Standards for Hazardous Air Pollutants (NESHAPs) to protect public health and welfare. NESHAPs potentially applicable to the proposed project included the National Emission Standard for Asbestos (40 CFR 61, Subpart M).

Greenhouse Gases

United States Environmental Protection Agency “Endangerment” and “Cause or Contribute” Findings

The U.S. Supreme Court held that the U.S. EPA must consider regulation of motor vehicle GHG emissions. In *Massachusetts v. Environmental Protection Agency et al.*, twelve states and cities, including California, together with several environmental organizations sued to require the U.S. EPA to regulate GHGs as pollutants under the CAA (127 S. Ct. 1438 (2007)). The Supreme Court ruled that GHGs fit within the CAA’s definition of a pollutant and that the U.S. EPA had the authority to regulate GHGs.

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the federal CAA (U.S. EPA, 2016):

- **Endangerment Finding:** The current and projected concentrations of the six key GHGs—CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

Corporate Average Fuel Economy Standards

In 2014, the U.S. EPA and the Department of Transportation’s National Highway Traffic Safety Administration established a program that reduces GHG emissions and improves fuel economy for all new cars and trucks sold in the U.S. The program requires manufacturers to build a fleet that meets all federal and state requirements with an end target fuel economy of 54.5 miles per gallon by model year 2025. In January 2017, U.S. EPA issued its Mid-Term Evaluation of the GHG emissions standards, finding that it would be practical and feasible for automakers to meet the 2025 standards in model year 2022 vehicles through a number of existing technologies.

In August 2018, the U.S. EPA revised its 2017 determination, and issued a proposed rule that maintains the 2020 Corporate Average Fuel Economy (CAFE) and CO₂ standards for model years 2021 through 2026 (83 Fed. Reg. 42986). The estimated CAFE and CO₂ standards for model year 2020 are 43.7 miles per gallon (mpg) and 204 grams of CO₂ per mile for passenger cars and 31.3 mpg and 284 grams of CO₂ per mile for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012. On May 1, 2018, California, joined by 16 other states and the District of Columbia, filed a petition challenging the U.S. EPA’s proposed rule to revise the vehicle emissions standards, arguing that the U.S. EPA had reached erroneous conclusions about the feasibility of meeting the existing standards. On October 25, 2019, the D.C. Circuit dismissed the challenges, concluding that it did not have jurisdiction to consider the U.S. EPA’s withdrawal of the Obama administration’s mid-term determination that model year 2022 to 2025 GHG emission standards promulgated in 2012 remained appropriate. The court noted that the withdrawal did not itself change the emission standards established in 2012 but only created the possibility that the standards could be modified in the future, similar to an agency’s grant of a petition for reconsideration of a rule. Accordingly, due to the uncertainty of future federal regulations, this analysis assumes that the existing CAFE standards will remain in place.

3.2 State

Criteria Air Pollutants

At the State level, CARB oversees air quality policies and regulations in California. California has adopted its own air quality standards (California Ambient Air Quality Standards, or CAAQS) as shown in Table 2. California’s ambient standards are at least as protective as the NAAQS and are often more stringent.

In 1988, California passed the California CAA (California Health and Safety Code Sections 39600 et seq.), which, like its federal counterpart, called for the designation of areas as attainment or nonattainment based on state ambient air quality standards rather than the federal standards. The California CAA requires each air district, in which state air quality standards are exceeded, to prepare a plan that documents reasonable progress towards attainment. If an air basin (or portion thereof) exceeds that CAAQS for a particular criteria air pollutant, it is considered to be nonattainment for that criteria air pollutant until the area can demonstrate compliance. As indicated in Table 3, Mariposa County is classified as non-attainment for the federal and state ozone standards.

Toxic Air Contaminants

The Toxic Air Contaminant Identification and Control Act was established in 1983 under AB 1807. A total of 243 substances have been designated TACs under California law; they include the 187 (federal) HAPs adopted in accordance with state law. The Air Toxics “Hot Spots” Information and Assessment Act of 1987 (AB 2588) seeks to identify, quantify, and evaluate risk from air toxics sources; however, AB 2588 does not, in and of itself, regulate air toxics emissions. Local air districts take the lead on establishing rules targeting TAC emissions and health risk reduction from stationary sources, while CARB addresses health risk reduction from mobile sources.

In 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. Further regulations of diesel emissions by the CARB include the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Offroad Diesel Vehicle Regulation, and the New Offroad Compression Ignition Diesel Engines and Equipment Program. All of these regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment.

In 2004, CARB adopted a measure to limit idling of diesel-fueled commercial motor vehicles. Heavy-duty diesel vehicles with a Gross Vehicle Weight Rating of 10,000 lbs. or heavier are prohibited from idling for more than 5 minutes within California’s borders. Exemptions to the rule apply for certain circumstances.

To address potential impacts related to naturally occurring asbestos, the CARB enforces the Asbestos Air Toxic Control Measures for Construction, Grading, Quarrying and Surface Mining Operations. This regulation is applicable to projects where any portion of the area to be disturbed has naturally-occurring asbestos, serpentine, or ultramafic rock and includes requirements to limit disturbance and subsequent emissions of airborne asbestos from various activities including construction and grading operations.

Greenhouse Gases

In California, the legal framework for GHG emission reduction has come about through an incremental set of Governor’s Executive Orders (EOs), legislation, and regulations put in place

since 2002. The recent major components of California's climate change initiative are identified below.

California Environmental Quality Act (CEQA)

The State CEQA Guidelines are embodied in the California Code of Regulations (CCR), Public Resources Code, Division 13, starting with Section 21000. State CEQA Guidelines section 15064.4 specifically addresses the significance of GHG emissions, requiring a lead agency to make a "good-faith effort" to "describe, calculate or estimate" GHG emissions in CEQA environmental documents. State CEQA Guidelines Section 15064.4 further states that the analysis of GHG impacts should include consideration of (1) the extent to which the project may increase or reduce GHG emissions, (2) whether the project emissions would exceed a locally applicable threshold of significance, and (3) the extent to which the project would comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions." The CEQA Guidelines also state that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including plans or regulations for the reduction of GHG emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located (State CEQA Guidelines Section 15064(h)(3)). The State CEQA Guidelines do not, however, set a numerical threshold of significance for GHG emissions.

The CEQA Guidelines also include the following direction on measures to mitigate GHG emissions, when such emissions are found to be significant:

Consistent with Section 15126.4(a), lead agencies shall consider feasible means, supported by substantial evidence and subject to monitoring or reporting, of mitigating the significant effects of greenhouse gas emissions. Measures to mitigate the significant effects of greenhouse gas emissions may include, among others:

- (1) Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision;
- (2) Reductions in emissions resulting from a project through implementation of project features, project design, or other measures;
- (3) Off-site measures, including offsets that are not otherwise required, to mitigate a project's emissions;
- (4) Measures that sequester greenhouse gases; and
- (5) In the case of the adoption of a plan, such as a general plan, long range development plan, or plans for the reduction of greenhouse gas emissions, mitigation may include the identification of specific measures that may be implemented on a project-by-project basis. Mitigation may also include the incorporation of specific measures or

policies found in an adopted ordinance or regulation that reduces the cumulative effect of emissions.³

Advanced Clean Cars Program

In January 2012, the CARB approved the Advanced Clean Cars program which combines the control of GHG emissions and criteria air pollutants, as well as requirements for greater numbers of zero-emission vehicles, into standards for vehicle model years 2017 through 2025. The program strengthens the GHG standard for 2017 models and beyond. This will be achieved through existing technologies, the use of stronger and lighter materials, and more efficient drivetrains and engines. The program's zero-emission vehicle regulation requires battery, fuel cell, and/or plug-in hybrid electric vehicles to account for up to 15 percent of California's new vehicle sales by 2025. The program also includes a clean fuels outlet regulation designed to support the commercialization of zero-emission hydrogen fuel cell vehicles planned by vehicle manufacturers by 2015 by requiring increased numbers of hydrogen fueling stations throughout the state.

The number of stations will grow as vehicle manufacturers sell more fuel cell vehicles. By 2025, when the rules will be fully implemented, the statewide fleet of new cars and light trucks will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions than the statewide fleet in 2016 (CARB, 2017a).

Assembly Bill 32 and The Global Warming Solutions Act

In 2006, the California legislature passed AB 32 (California Health and Safety Code Division 25.5, Sections 38500, et seq.), also known as the Global Warming Solutions Act. AB 32 required CARB to design and implement feasible and cost-effective emissions limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25-percent reduction in emissions). AB 32 anticipated that the GHG reduction goals will be met, in part, through local government actions. CARB identified a GHG reduction target of 15 percent from current levels for local governments (municipal and community-wide) and noted that successful implementation of the plan relies on local governments' land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions. The initial AB 32 emissions reduction limit was achieved in 2017, 3 years prior to the 2020 goal.

Executive Order B-30-15

In 2015, Governor Brown issued EO B-30-15, establishing a GHG reduction target of 40 percent below 1990 levels by 2030. This goal was set to make it possible to reach the ultimate goal of AB 32 to reduce GHG emissions by 80 percent under 1990 levels by 2050. Specifically, the EO directed CARB to update the Scoping Plan to express this 2030 target in metric tons. As discussed below, on September 8, 2016, Governor Jerry Brown signed SB 32, which codified the

³ State CEQA Guidelines section 15126.4(a).

2030 reduction target called for in EO B-30-15. CARB's 2017 Scoping Plan update addresses the 2030 target.

Senate Bill 32 and Assembly Bill 197

Signed into law on September 8, 2016, SB 32 (Amendments to California Global Warming Solutions Act of 2006: Emission Limit) amended HSC Division 25.5 and codifies the 2030 target in EO B-30-15 (40 percent below 1990 levels by 2030). The 2030 target is intended to ensure that California remains on track to achieve the goal set forth by EO B-30-15 to reduce statewide GHG emissions by 2050 to 80 percent below 1990 levels. SB 32 states the intent of the legislature to continue to reduce GHGs for the protection of all areas of the state and especially the state's most disadvantaged communities, which are disproportionately impacted by the deleterious effects of climate change on public health. The law amended HSC Division 25.5 and established a new climate pollution reduction target of 40 percent below 1990 levels by 2030, while AB 197 included provisions to ensure the benefits of State climate policies include disadvantaged communities.

Climate Change Scoping Plan

Pursuant to AB 32, CARB adopted a *Climate Change Scoping Plan* in December 2008 (re-approved by CARB on August 24, 2011) outlining measures to meet the 2020 GHG reduction goals (CARB, 2008). In order to meet these goals, California had to reduce its GHG emissions by 30 percent below projected 2020 business-as-usual emissions levels or about 15 percent from 2008 levels. The Scoping Plan relied on the requirements of SB 375 (discussed below) to implement the carbon emission reductions anticipated from land use decisions.

The Scoping Plan is required by AB 32 to be updated at least every 5 years. The *First Update to the Climate Change Scoping Plan* describes progress made to meet near-term emissions goals of AB 32, defines California's climate change priorities and activities for the next few years, and describes the issues facing the State as it establishes a framework for achieving air quality and climate goals beyond the year 2020. On December 14, 2017, CARB approved the final version of California's *2017 Climate Change Scoping Plan* (2017 Scoping Plan Update), which outlines the proposed framework of action for achieving the 2030 GHG target of 40 percent reduction in GHG emissions relative to 1990 levels (CARB, 2017b). The 2017 Scoping Plan Update identifies key sectors of the implementation strategy, which includes improvements in low carbon energy industry, transportation sustainability, natural and working lands, waste management, and water. CARB determined that the target Statewide 2030 emissions limit is 260 MMTCO₂e, and that further commitments will need to be made to achieve an additional reduction of 50 MMTCO₂e beyond current policies and programs. The cornerstone of the 2017 Scoping Plan Update is an expansion of the Cap-and-Trade program to meet the aggressive 2030 GHG emissions goal represented by SB 32 and ensure achievement of the 2050 limit set forth by EO B-30-15.

Executive Order B-16-12

In 2012, Governor Brown issued EO B-16-12, ordering that California's State vehicle fleet increase the number of zero-emission vehicles through the normal course of fleet replacement so

that at least 10 percent of fleet purchases of light-duty vehicles be zero-emission by 2015 and 25 percent of fleet purchases of light-duty vehicles be zero-emission by 2020. The EO also requires that California target for 2050 a reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels.

California Renewables Portfolio Standard

SB 1078 established the Renewables Portfolio Standard (RPS) in 2002, which required retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from eligible renewable sources by 2017. SB 107 changed the target date to 2010. In November 2008, EO S-14-08 expanded the state's RPS goal to 33 percent renewable power by 2020. In September 2009, EO S-21-09 directed CARB (under its AB 32 authority) to enact regulations to help the state meet the 2020 goal of 33 percent renewable energy. The 33 percent by 2020 RPS goal was codified in April 2011 with SB X1-2. The updated RPS applies to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. SB 350, discussed below, was signed in October 2015 and requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030. Most recently, SB 100, signed by Governor Brown on September 10, 2018, increases the RPS requirement to 60 percent eligible renewables by 2030 and 100 percent by 2045.

Senate Bill 350

SB 350 (Clean Energy and Pollution Reduction Act of 2015) was signed into law on October 7, 2015, establishing new goals for clean energy, clean air, and GHG reduction goals for 2030 and beyond. SB 350 requires the following:

- Increase California's renewable electricity procurement goal under the RPS from 33 percent by 2020 to 50 percent by 2030;
- Double existing building energy efficiency by 2030; and
- Facilitate the growth of renewable energy markets within the western U.S. by reorganizing the California Independent System Operator.

Title 24 Building Energy Efficiency Standards

The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically (typically every three years) to allow for the consideration and inclusion of new energy efficiency technologies and methods. The current Title 24, Part 6 standards (2019) were made effective on January 1, 2020.

Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code. CALGreen is intended to encourage more sustainable and

environmentally friendly building practices, require low-pollution emitting substances that cause less harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment. Since 2011, the CALGreen Code is mandatory for all new residential and non-residential buildings constructed in the state. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality. The CALGreen Code was most recently updated in 2019 to include new mandatory measures for residential and nonresidential uses; the new measures took effect on January 1, 2020.

3.3 Local

Mariposa County Air Pollution Control District

The Mariposa County Air Pollution Control District (MCAPCD) is the regional agency responsible for air quality regulation within Mariposa County. The agency regulates air quality through its planning and review activities and has permit authority over most types of stationary emission sources of criteria air pollutants and TACs.

Mariposa County Air Pollution Control District CEQA Thresholds of Significance

The MCAPCD has published thresholds of significance, as included in the County of Mariposa General Plan Environmental Impact Report. This includes quantitative and qualitative significance criteria for evaluating air quality impacts. The qualitative thresholds of significance include requirements to comply with the Mariposa County, state, and federal air quality standards; and the quantitative thresholds of significance where emissions in excess of 100 tons per year of any criteria air contaminant or precursor would be considered significant.

In addition to thresholds of significance for criteria air pollutant emissions, the MCAPCD has also established thresholds of significance for GHG emissions, included in the County of Mariposa General Plan Environmental Impact Report. According to the MCAPCD, the proposed project would have a significant impact with respect to GHG emissions if it were to emit greater than 500 tons of CO₂e per year (MCAPCD, n.d.).

Mariposa County Air Pollution Control District Rules and Regulations

Construction and operation of the proposed project would be subject to the applicable MCAPCD rules and regulations with regard to visible emissions, nuisance, particulate matter emissions, emissions of sulfur compounds or combustion contaminants, open burning, and obtaining authority to construct permits and permits to operate.

Mariposa County General Plan

The Mariposa County General Plan (General Plan) (Mariposa County, n.d.) includes various goals, policies, objectives, and measures to guide development within the County, some of which relate to reducing criteria air pollutant and GHG emissions. Most of the policies and measures in the General Plan fall under the responsibility of either the County or the MCAPCD. The

Conservation and Open Space element includes the following goals and policies that may impact air quality and/or GHG emissions.

Conservation and Open Space Element

Goal 11-1: Conserve the natural and scenic reservoirs, and open space lands to protect and enhance the County's quality of life and character ensuring a viable economy.

Policy 11-1c: Implement standards that minimize impacts on and/or improve air quality.

Implementation Measure 11-1c(1): The County will implement Federal and State air quality regulations.

Implementation Measure 11-1c(2): Establish land use patterns that minimize impacts to air quality.

Implementation Measure 11-1c(3): Implement a program that minimizes impacts on and/or improves air quality that may include but are not limited to:

- Encourage maximized solar access where feasible and consistent with the maintenance of scenic values, in new subdivision designs to optimize energy efficiency; and
- Road improvement projects such as paving unpaved roads which improve air quality.

Implementation Measure 11-1c(4): The County shall cooperate with the Air Pollution Control District (APCD), or successor agency, to:

- Review development proposals to address cumulative and long-term air quality impacts;
- Work with local public utility providers and the private sector to encourage the development and implementation of educational and incentive programs to encourage energy conservation, house weatherization, and solar energy use;
- Work with the Mariposa County department of public works and homeowner associations to encourage the development and implementation of educational and incentive programs for composting, mulching, grinding, cogeneration, feedstocks, and chipping in lieu of outdoor burning;
- Work with appropriate agencies to develop programs to maximize the participation of employers in employer-operated van pool and/or ride sharing for employees and mass transit service for both employers and customers/visitors; and
- Work with the school districts to replace existing buses with less polluting models.

4. Environmental Impacts and Mitigation Measures

4.1 Significance Thresholds

Consistent with Appendix G of the CEQA Guidelines, air quality and climate change-related impacts are considered significant if implementation of the project under consideration would result in any of the following:

- Conflict with or obstruct implementation of the applicable air quality plan.
- 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.
- Expose sensitive receptors to substantial pollutant concentrations.
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

As stated in Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air districts may be relied on to make the above determinations. The significance thresholds used for project impact analyses are based on the MCAPCD's CEQA Guidelines, discussed above.

4.2 Impacts and Mitigation Measures

Impacts

Impact AQ-1: Construction and operational activities associated with the proposed project could conflict with or obstruct implementation of the applicable air quality plan.

Consistency with the State Implementation Plan

The Mariposa County SIP is a compilation of the MCAPCD rules and regulations. The proposed project would comply with the applicable MCAPCD rules and regulations; therefore, the proposed project would be consistent with the Mariposa County SIP, which is the applicable air quality plan for the project area. Thus, the impact would be considered **less than significant**.

Consistency with the Mariposa Countywide General Plan

The Mariposa Countywide General Plan includes various policies and actions that both directly and indirectly address air quality issues and GHG emissions within the County. As discussed

above, the many of the measures included in the general plan fall under the responsibility of the County for implementation including requirements for implementing State and federal regulations as well as collaborating with other agencies. Although these measures do not fall under the responsibility of the proposed project and its proponents, the proposed project would not conflict with or hinder the County's implementation of any of the measures related to air quality and the impact would be considered **less than significant**.

Mitigation Measures: None required.

Impact AQ-2: Construction and operation of the proposed project could result in emissions of criteria air pollutants that would exceed the MCAPCD thresholds of significance.

Emissions of criteria air pollutants are categorized as either short-term (during construction) or long-term (during operation). The proposed project would generate short-term and long-term emissions of pollutants for which the project area is in nonattainment including ozone. Criteria air pollutant emissions that would result from construction and operation of the proposed project were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 and were then compared to the MCAPCD thresholds of significance. Inputs to the model included size of the development, amount of material imported, number of fire pits, emergency generator testing and maintenance schedule, and vehicle trips generated from guests traveling to the project site. Where project-specific information was not available, CalEEMod defaults were used. Detailed modeling assumptions are included in **Attachment A**.

Short-Term Construction Impacts

Construction-related emissions are considered to be short-term in duration, nevertheless, they can represent a significant, adverse impact to air quality conditions. Both criteria pollutant and TAC emissions would be generated during construction of the proposed project from the use of heavy-duty construction equipment, haul-truck trips, and from construction workers traveling to and from the project site. TAC emission impacts are addressed under Impact 3.2-3, below.

Construction of Phase 1 of the proposed project was assumed to begin in October 2021. Construction would begin with demolition of the existing horse barn on the project site, followed by site preparation, grading, and construction of the tent platforms, reception kiosk, and bath house. Phase 2 of construction would follow completion of Phase I and would include development of 40 additional tents, for a total of 80 tents at the site. During the course of construction, the proposed project would involve hauling of approximately 80 cubic yards of exported material.

Emissions of ozone precursors (ROG and NO_x) are generated primarily by mobile sources and largely vary as a function of vehicle trips per day and the type, quantity, intensity, and frequency of heavy-duty, off-road equipment used. Construction-related fugitive dust emissions of particulate matter would vary from day-to-day depending on the level and type of activity, silt content of the soil, and the weather. Construction activities could result in dust adversely affecting local visibility and PM₁₀ concentrations on a temporary and intermittent basis.

Unmitigated construction emissions that would result from the use of off-road equipment, haul trucks for exporting materials, on-road worker vehicle use, and vendor delivery trips are reported and compared to the MCAPCD thresholds of significance in **Table 4**.

TABLE 4
UNMITIGATED PROJECT CONSTRUCTION EMISSIONS^{1,2}

Construction Year	ROG (tpy)	NO _x (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)
Phase 1 2021	0.08	0.61	0.04	0.03
2021 Total	0.08	0.61	0.04	0.03
Phase 1 2022	0.02	0.13	0.01	0.01
Phase 2 2022	0.10	0.76	0.05	0.04
2022 Total	0.12	0.90	0.06	0.05
MCAPCD Thresholds	100	100	100	100
Exceeds Threshold?	No	No	No	No

NOTES:

tpy = tons per year

1 Project construction emissions estimates were made using CalEEMod version 2016.3.2. See Attachment A for model outputs and more detailed assumptions.

2 Values in **bold** are in excess of the applicable MCAPCD significance threshold.

SOURCE: Attachment A.

As shown in Table 4, average daily construction emissions criteria air pollutants would not exceed the MCAPCD thresholds of significance for construction before the implementation of mitigation measures.

Long-Term Operational Impacts

Operational emissions would be generated from area sources (i.e., the use of consumer products, fire pits, and landscaping equipment), energy use, and mobile sources (i.e., automobile use from guests and workers traveling to and from the project site). The proposed project was assumed to include 30 propane-fueled fire pits at each of the luxury guest tents, along with a communal fire pit that would burn wood during the winter and propane during the summer months. The proposed project would also include an emergency diesel generator which was assumed to be operational for testing and maintenance for approximately 26 hours per year. Operational emissions of criteria air pollutants were estimated using CalEEMod and are summarized in **Table 5**, below. The MCAPCD thresholds of significance for operational criteria air pollutant emissions are the same as those applicable to construction emissions.

TABLE 5
UNMITIGATED ANNUAL OPERATIONAL EMISSIONS^{1,2}

	ROG (tpy)	NO _x (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)
Annual Emissions	0.93	0.50	0.42	0.20
MCAPCD Thresholds	100	100	100	100
Significant (Yes or No)?	No	No	No	No

NOTES:

tpy = tons per year

1 Project operational emissions estimates were made using CalEEMod version 2016.3.2. See Attachment A for model outputs and more detailed assumptions.

2 Values in **bold** are in excess of the applicable BAAQMD significance threshold.

SOURCE: Attachment A.

As shown in Table 5, the proposed project would not generate operational emissions of any criteria air pollutant that would exceed the MCAPCD thresholds of 100 tons per year and, as discussed above, the proposed project would not generate construction-related emissions of criteria air pollutants that would exceed the thresholds of significance. Therefore, mass emissions associated with the proposed project would not result in a net increase of criteria air pollutants for which the project area is in non-attainment under an applicable federal or state ambient air quality standard. The proposed project would have a **less than significant impact** with respect to emissions of criteria air pollutants, and no mitigation is required.

Mitigation Measures: None required.

Impact AQ-3: Implementation of the proposed project could expose sensitive receptors to substantial pollutant concentrations.

The proposed project would generate emissions of TACs during construction from use of heavy duty construction equipment and from diesel-fueled haul trucks. Operation of the proposed project would generate emissions of TACs from testing and maintenance of the emergency standby diesel generator and operation of one wood-burning and 30 propane fire pits. As discussed above, sensitive receptors are residences, schools, hospitals, convalescent homes, and other facilities where people spend significant amounts of time and have the potential to be exposed to TACs. The nearest sensitive receptor is a resident located greater than 1,000 feet north of the proposed project site; therefore, the receptor is outside of the 1,000-foot zone of influence generally recommended for evaluating health risk impacts (BAAQMD, 2017). Due to the short term nature of construction activity and the distance to the residential receptor, it is unlikely that emissions of TACs generated during construction would result in a significant negative health effects to the receptor at this residence. Similarly, operational emissions of TACs would be minimal due to the limited amount of time needed for testing and maintenance, approximately 26 hours per year. Furthermore, operation of the single woodburning fire pit would be limited to three hours per day during the summer months, and would not be used during the off season. Due to the limited operational activities that would result in TAC emissions, and the distance between

the nearest sensitive receptor and the project site, TAC emissions generated from the proposed project are unlikely to result in significant health impacts to sensitive receptors. The impact would be **less than significant**.

Mitigation Measures: None required.

Impact AQ-4: Implementation of the proposed project could result in odorous emissions that could adversely affect a substantial number of people.

An odor analysis evaluates the potential for a project to generate odors during construction and operations. During construction, the use of diesel-powered vehicles and equipment could temporarily generate localized odors, which would cease upon project completion and would not result in a significant odor impact.

Typical land uses that have the potential to generate continuous odorous impacts and odor complaints during operation include wastewater treatment plants, landfills, confined animal facilities, composting stations, food manufacturing plants, refineries, and chemical plants. The proposed project is a campsite that does not include land uses that are identified as common odor sources. Therefore, operation of the proposed project would result in a **less than significant impact** with respect to odorous emissions.

Mitigation Measures: None required.

Impact AQ-5: Implementation of the proposed project would not result in direct and indirect emissions of GHGs that would result in a significant impact on the environment.

The proposed project would generate GHG emissions from direct and indirect sources during construction and operation. Construction activities associated with the proposed project would take place in two phases, beginning in October 2021 and concluding in 2023. Construction emissions of GHGs would be generated from worker trips, vendor trips, and haul trips as well as from the use of heavy duty construction equipment. The proposed project is expected to be operational in 2023 and would generate emissions of GHGs from energy use, mobile sources (i.e., employees and guests traveling to and from the site), area sources (i.e., use of consumer products and operation of fire pits), and stationary sources (i.e., testing and maintenance of an emergency diesel generator).

Construction and operational emissions associated with the proposed project were calculated using CalEEMod. Total construction emissions generated by the proposed project have been amortized over the expected operational (long-term) life of the proposed project, which is estimated to be 30 years. Overall, construction of the proposed project would result in approximately 99.23 MT CO₂e and 115.14 MT CO₂e during Phase 1 and Phase 2 of construction, respectively, for a total of 214.37 MT CO₂e generated from construction activity. Annual operational emissions plus construction emissions amortized over the 30-year life of the proposed

project would be approximately 464.25 MT CO₂e per year, as shown in Table 6. Therefore, GHG emissions associated with the proposed project would not exceed the MCAPCD threshold of 500 MT CO₂e per year and the impact would be considered **less than significant**.

**TABLE 6
UNMITIGATED GHG EMISSIONS**

	MT CO ₂ e / year
Construction GHG Emissions (Amortized over 30 years)	7.15
Operational GHG Emissions	457.10
Total GHG Emissions (Amortized construction + operation)	464.25
MCAPCD Thresholds	500
Significant (Yes or No)?	No

NOTES:

tpy = tons per year

1 Project construction and operational emissions estimates were made using CalEEMod version 2016.3.2. See Attachment A for model outputs and more detailed assumptions.

2 Values in **bold** are in excess of the applicable BAAQMD significance threshold.

SOURCE: Attachment A.

Mitigation Measures: None required.

Impact AQ-6: The proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

As discussed above, Mariposa County has not adopted a Climate Action Plan or GHG Reduction Plan to address the County's contribution to climate change impacts. Although the Mariposa County General Plan includes policies related to air quality and climate change, implementation of these policies fall under the responsibility of the County, and are therefore not applicable to the proposed project. Thus, this analysis evaluates the proposed project's consistency with the 2017 Scoping Plan Update.

The primary goal of AB 32 is the requirement for statewide GHG emissions to be reduced to 1990 levels by 2020 and required the development of the first Climate Change Scoping Plan (2008) for achieving the necessary GHG reductions in a technological and economically feasible manner, the adoption of a mandatory GHG emissions reporting regulation, and the establishment of a market-based declining emission limit program (i.e., the cap-and-trade program). The First Update to the Scoping Plan was approved by CARB in May 2014 and built upon the initial Scoping Plan with new strategies and recommendations to achieve the AB 32 target.

EO B-30-15 established a GHG emission reduction goal for California of 40 percent below 1990 levels by 2030. This EO also directed all state agencies with jurisdiction over GHG-emitting sources to implement measures designed to achieve the new interim 2030 goal, as well as the pre-existing, long-term 2050 goal identified in EO S-3-05. Additionally, EO B-30-15 directed CARB

to update its Scoping Plan to address the 2030 goal, which it has done with the 2017 Scoping Plan Update. SB 32 codifies the 2030 emissions reduction goal of EO B-30-15, requiring CARB to ensure that statewide GHG emissions are reduced to 40 percent below 1990 levels by 2030.

The proposed project would be consistent with key state plans and regulatory requirements referenced in the 2017 Scoping Plan Update designed to reduce statewide emissions. According to the 2017 Scoping Plan Update, reductions needed to achieve the 2030 target are expected to be achieved by increasing the RPS to 50 percent of the State's electricity by 2030, greatly increasing the fuel economy of vehicles and the number of zero-emission or hybrid vehicles, reducing the rate of growth in VMT, and increasing the use of high efficiency appliances and water heaters. As discussed previously, the Governor has signed into law SB 350 (Chapter 547, Statutes of 2015), which increased the RPS to 60 percent by 2030 and included interim targets of 40 percent by 2024 and 45 percent by 2027. With the passage of SB 100, California's RPS was further increased and requires retail sellers and local publicly-owned electric utilities to procure eligible renewable electricity for 44 percent of retail sales by the end of 2024, 52 percent by the end of 2027, and 60 percent by the end of 2030; and requires that CARB should plan for 100 percent eligible renewable energy resources and zero-carbon resources by the end of 2045, which would reduce the proposed project's electricity-related emissions.

The proposed project would support and not impede implementation of these potential reduction strategies identified by CARB, and it would benefit from statewide and utility-provider efforts towards increasing the portion of electricity provided from renewable resources. The proposed project would also benefit from statewide efforts towards increasing the fuel economy standards of vehicles and reducing the carbon content of fuels. The proposed project would utilize energy efficiency appliances and equipment, as required by Title 24. The proposed project's post-2020 emissions trajectory is expected to follow a declining trend, consistent with the 2017 Scoping Plan Update, and the proposed project would not conflict with or obstruct implementation of the 2017 Scoping Plan Update, and the impact would be **less than significant**.

Mitigation Measures: None required.

Cumulative Impacts

Impact AQ-7: The proposed project, in combination with past, present, and probable future projects in the project area, would not result in significant adverse cumulative air quality or greenhouse gas impacts.

As discussed under the Environmental Setting section, above, Mariposa County is considered to be a nonattainment area for the state 1-hour ozone standard, and the federal 8-hour ozone standard. Construction and operational emissions of ozone precursors (ROG and NO_x) could cumulatively contribute to pollutant concentrations that would exceed the federal and State ambient air quality standards. However, the mass emissions thresholds set by Mariposa County are representative of the allowable incremental contribution of air pollutants from projects that would continue to allow the MCAB to progress towards attainment of the NAAQS and CAAQS. Therefore, because the proposed project would not generate emissions during either construction or operation that would exceed the applicable emissions thresholds for criteria pollutants, the

proposed project would not make a significant contribution to cumulative impacts, and the impact would be considered **less than significant**.

Emissions of TACs are typically localized and not region-wide. The proposed project would result in less than significant impacts with respect to exposure of sensitive receptors to TACS during both construction and operation. Therefore, the proposed project's contribution to the cumulative health risk impacts from exposure to TACs would be **less than significant**.

Climate change is a global phenomenon and, therefore, GHG emissions are considered pollutants of global concern, and the geographic context within which the proposed project's contribution to GHG impacts is considered is global. While pollutants with localized air quality effects have relatively short atmospheric lifetimes (approximately one day), GHGs have long atmospheric lifetimes (one year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Therefore, the effects of GHGs are also experienced globally. The atmospheric concentration of GHGs determines the intensity of climate change, with current levels already leading to increases in global temperatures, sea level rise, severe weather, and other environmental impacts. The continued increase in atmospheric GHG concentrations will only worsen the severity and intensity of climate change, leading to irrevocable environmental changes. Therefore, GHG impacts on global climate change are inherently cumulative. No single project could generate enough GHG emissions to contribute noticeably to a change in the global average temperature. However, the combination of GHG emissions from past, present, and future projects contributes substantially to the phenomenon of global climate change and its associated environmental impacts. As discussed, GHG emissions from the construction and operation of the proposed project would be less than significant and the proposed project would comply with the goals and actions of applicable GHG reduction plans at the state and local levels that aim to achieve the 2030 target established by SB 32 for California to meet a 40 percent reduction in GHG emissions by 2030 compared to 1990 levels. Other cumulative projects proposed and being developed in the proposed project would also be required to make this determination and implement measures to comply. Therefore, because the proposed project's construction and operation emissions of greenhouse gases would be less than levels identified by the MCAPCD as significant, and because these proposed project emissions would not impede attainment of the state's GHG reduction goals for 2030, the proposed project's incremental contribution to greenhouse gases would not be cumulatively considerable, and the impact would be **less than significant**.

Mitigation Measures: None required.

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